SEQUENCE LISTING

<110> The Trustees of the University of Pennsylvania
      Wilson, James M.
      Gao, Guangping
      Alvira, Mauricio R.
      Vandenberghe, Luk H.

<120> Adeno-Associated Virus (AAV) Clades, Sequences, Vectors
      Containing Same, and Uses Therefor

<130> UPN-P3230PCT

<150> US 60/508,226
<151> 2003-09-30

<150> US 60/566,546
<151> 2004-04-29

<160> 236

<170> PatentIn version 3.3

<210> 1
<211> 2211
<212> DNA
<213> adeno-associated virus, clone hu.31

<400> 1
atggctgccg atggttatct tccagattgg ctcgaggaca accttagtga aggaattcgc   60

gagtggtggg ctttgaaacc tggagcccct caacccaagg caaatcaaca acatcaagac   120

aacgctcgag gtcttgtgct tccgggttac aaataccttg acccggcaa cggactcgac   180

aaggggagc cggtcaacgc agcagacgcg gcggccctcg agcacgacaa ggcctacgac   240

cagcagctca aggccggaga caacccgtac ctcaagtaca ccacgccga cgccgagttc   300

caggagcggc tcaaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360

gccaaaaaga ggcttcttga acctcttggt ctggttgagg aagcggctaa gacggctcct   420

ggaaagaaga ggcctgtaga gcagtctcct caggaaccgg actcctccgc gggtattggc   480

aaatcgggtg cacagcccgc taaaaagaga ctcaatttcg gtcagactgg cgacacagag   540

tcagtcccag accctcaacc aatcggagaa cctcccgcag cccctcagg tgtgggatct   600

cttacaatgg cttcaggtgg tggcgcacca gtggcagaca taacgaagg tgccgatgga   660

gtgggtagtt cctcgggaaa ttggcattgc gattcccaat ggctggggga cagagtcatc   720

accaccagca cccgaacctg ggccctgccc acctacaaca tcacctcta caagcaaatc   780

tccaacagca catctggagg atcttcaaat gacaacgcct acttcggcta cagcaccccc   840

tggggggtatt ttgacttcaa cagattccac tgccacttct caccacgtga ctggcagcga   900

ctcatcaaca caaactgggg attccggcct aagcgactca acttcaagct cttcaacatt   960

caggtcaaag aggttacgga caacaatgga gtcaagacca tcgccaataa ccttaccagc   1020

acggtccagg tcttcacgga ctcagactat cagctcccgt acgtgctcgg gtcggctcac   1080

gagggctgcc tcccgccgtt cccagcggac gtttttcatga ttcctcagta cgggtatctg   1140

acgcttaatg atggaagcca ggccgtgggt cgttcgtcct tttactgcct ggaatatttc   1200

ccgtcgcaaa tgctaagaac gggtaacaac ttccagttca gctacgagtt tgagaacgta   1260

cctttccata gcagctacgc tcacagccaa gcctggacc gactaatgaa tccactcatc   1320

gaccaatact tgtactatct ctcaaagact attaacggtt ctggacagaa tcaacaaacg   1380

ctaaaattca gtgtggccgg acccagcaac atggctgtcc agggaagaaa ctacatacct   1440

ggacccagct accgacaaca acgtgtctca accactgtga ctcaaaacaa caacagcgaa   1500

tttgcttggc ctggagcttc ttcttgggct ctcaatggac gtaatagctt gatgaatcct   1560

ggacctgcta tggccagcca caaagaagga gaggaccgtt ctttcctttt gtctggatct   1620

ttaatttttg gcaaacaagg aactggaaga gacaacgtgg atgcggacaa agtcatgata   1680

accaacgaag aagaaattaa aactactaac ccggtagcaa cggagtccta tggacaagtg   1740

gccacaaacc accagagtgc ccaagcacag gcgcagaccg gctgggttca aaaccaagga   1800

atacttccgg gtatggtttg gcaggacaga gatgtgtacc tgcaaggacc catttgggcc   1860

```
aaaattcctc acacggacgg caactttcac ccttctccgc tgatgggagg gtttggaatg    1920
aagcacccgc ctcctcagat cctcatcaaa aacacacctg tacctgcgga tcctccaacg    1980
gccttcaaca aggacaagct gaactctttc atcacccagt attctactgg ccaagtcagc    2040
gtggagatcg agtgggagct gcagaaggaa aacagcaagc gctggaaccc ggagatccag    2100
tacacttcca actattacaa gtctaataat gttgaatttg ctgttaatac tgaaggtgta    2160
tatagtgaac cccgccccat tggcaccaga tacctgactc gtaatctgta a            2211
```

<210> 2
<211> 2211
<212> DNA
<213> new AAV serotype, clone hu.32

<400> 2
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccggcaa cggactcgac    180
aagggggagc cggtcaacgc agcagacgcg gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aggccggaga caacccgtac ctcaagtaca ccacgccga cgccgagttc    300
caggagcggc tcaaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaaaaaga ggcttcttga acctcttggt ctggttgagg aagcggctaa gacggctcct    420
ggaaagaaga ggcctgtaga gcagtctcct caggaaccgg actcctccgc gggtattggc    480
aaatcgggtt cacagcccgc taaaaagaaa ctcaatttcg gtcagactgg cgacacagag    540
tcagtccccg accctcaacc aatcggagaa cctcccgcag cccccctcagg tgtgggatct    600
cttacaatgg cttcaggtgg tggcgcacca gtggcagaca taacgaagg tgccgatgga    660
gtgggtagtt cctcgggaaa ttggcattgc gattcccaat ggctggggga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca tcacctcta caagcaaatc    780
tccaacagca catctggagg atcttcaaat gacaacgcct acttcggcta cagcacccc    840
tgggggtatt ttgacttcaa cagattccac tgccacttct caccacgtga ctggcagcga    900
ctcatcaaca caaactgggg attccggcct aagcgactca acttcaagct cttcaacatt    960
caggtcaaag aggttacgga caacaatgga gtcaagacca cgccaataa ccttaccagc   1020
acggtccagg tcttcacgga ctcagactat cagctcccgt acgtgctcgg gtcggctcac   1080
gagggctgcc tcccgccgtt cccagcggac gttttcatga ttcctcagta cgggtatctg   1140
acgcttaatg atgggagcca ggccgtgggt cgttcgtcct tttactgcct ggaatatttc   1200
ccgtcgcaaa tgctaagaac gggtaacaac ttccagttca gctacgagtt tgagaacgta   1260
cctttccata gcagctacgc tcacagccaa agcctggacc gactaatgaa tccactcatc   1320
gaccaatact tgtactatct ctcaaagact attaacggtt ctggacagaa tcaacaaacg   1380
ctaaaattca gcgtggccgg acccagcaac atggctgtcc agggaagaaa ctacatacct   1440
ggacccagct accgacaaca cgtgtctca accactgtga ctcaaaacaa caacagcgaa   1500
tttgcttggc ctggagcttc ttcttgggct ctcaatggac gtaatagctt gatgaatcct   1560
ggacctgcta tggccagcca caaagaagga gaggaccgtt tctttccttt gtctggatct   1620
ttaatttttg gcaaacaagg aactggaaga gacaacgtgg atgcggacaa agtcatgata   1680
accaacgaag aagaaattaa aactactaac ccggtagcaa cggagtccta tggacaagtg   1740
gccacaaacc accagagtgc ccaagcacag cgcagaccg gctgggttca aaaccaagga   1800
atacttccgg gtatggtttg gcaggacaga gatgtgtacc tgcaaggacc catttgggcc   1860
aaaattcctc acacggacgg caactttcac ccttctccgc taatgggagg gtttggaatg   1920
aagcacccgc ctcctcagat cctcatcaaa aacacacctg tacctgcgga tcctccaacg   1980
gctttcaata aggacaagct gaactctttc atcacccagt attctactgg ccaagtcagc   2040
gtggagattg agtgggagct gcagaaggaa aacagcaagc gctggaaccc ggagatccag   2100
tacacttcca actattacaa gtctaataat gttgaatttg ctgttaatac tgaaggtgta   2160
```

tatagtgaac cccgccccat tggcaccaga tacctgactc gtaatctgta a   2211

<210> 3
<211> 2211
<212> DNA
<213> adeno-associated virus, human clone 9

<400> 3
atggctgccg atggttatct tccagattgg ctcgaggaca accttagtga aggaattcgc   60

gagtggtggg ctttgaaacc tggagcccct caacccaagg caaatcaaca acatcaagac   120

aacgctcgag gtcttgtgct tccgggttac aaataccttg acccggcaa cggactcgac   180

aagggggagc cggtcaacgc agcagacgcg gcggccctcg agcacgacaa ggcctacgac   240

cagcagctca aggccggaga caacccgtac ctcaagtaca ccacgccga cgccgagttc   300

caggagcggc tcaaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360

gccaaaaaga ggcttcttga acctcttggt ctggttgagg aagcggctaa gacggctcct   420

ggaaagaaga ggcctgtaga gcagtctcct caggaaccgg actcctccgc gggtattggc   480

aaatcgggtg cacagcccgc taaaaagaga ctcaatttcg gtcagactgg cgacacagag   540

tcagtcccag accctcaacc aatcggagaa cctcccgcag cccctcagg tgtgggatct   600

cttacaatgg cttcaggtgg tggcgcacca gtggcagaca taacgaagg tgccgatgga   660

gtgggtagtt cctcgggaaa ttggcattgc gattcccaat ggctggggga cagagtcatc   720

accaccagca cccgaacctg ggccctgccc acctacaaca tcacctcta caagcaaatc   780

tccaacagca catctggagg atcttcaaat gacaacgcct acttcggcta cagcaccccc   840

tggggggtatt ttgacttcaa cagattccac tgccacttct caccacgtga ctggcagcga   900

ctcatcaaca caactgggg attccggcct aagcgactca acttcaagct cttcaacatt   960

caggtcaaag aggttacgga caacaatgga gtcaagacca tcgccaataa ccttaccagc   1020

acggtccagg tcttcacgga ctcagactat cagctcccgt acgtgctcgg gtcggctcac   1080

gagggctgcc tcccgccgtt cccagcggac gttttcatga ttcctcagta cgggtatctg   1140

acgcttaatg atggaagcca ggccgtgggt cgttcgtcct tttactgcct ggaatatttc   1200

ccgtcgcaaa tgctaagaac gggtaacaac ttccagttca gctacgagtt tgagaacgta   1260

cctttccata gcagctacgc tcacagccaa gcctggacc gactaatgaa tccactcatc   1320

gaccaatact tgtactatct ctcaaagact attaacggtt ctggacagaa tcaacaaacg   1380

ctaaaattca gtgtggccgg acccagcaac atggctgtcc agggaagaaa ctacatacct   1440

ggacccagct accgacaaca acgtgtctca accactgtga ctcaaacaa caacagcgaa   1500

tttgcttggc ctggagcttt cttggggct ctcaatggac gtaatagctt gatgaatcct   1560

ggacctgcta tggccagcca caaagaagga gaggaccgtt ctttcctttt gtctggatct   1620

ttaatttttg gcaaacaagg aactggaaga gacaacgtgg atgcggacaa agtcatgata   1680

accaacgaag aagaaattaa aactactaac ccggtagcaa cggagtccta tggacaagtg   1740

gccacaaacc accagagtgc ccaagcacag gcgcagaccg gctgggttca aaaccaagga   1800

atacttccgg gtatggtttg gcaggacaga gatgtgtacc tgcaaggacc catttgggcc   1860

aaaattcctc acacggacgg caactttcac ccttctccgc tgatgggagg gtttggaatg   1920

aagcacccgc ctccaatcag atcatcaagat cataggaggt caacacccct tacctgcgga   1980

gccttcaaca aggacaagct gaactctttc atcacccagt attctactgg ccaagtcagc   2040

gtggagatcg agtgggagct gcagaaggaa aacagcaagc gctggaaccc ggagatccag   2100

tacacttcca actattacaa gtctaataat gttgaatttg ctgttaatac tgaaggtgta   2160

tatagtgaac cccgccccat tggcaccaga tacctgactc gtaatctgta a   2211

<210> 4
<211> 2217
<212> DNA
<213> new AAV serotype, clone hu.17

<400> 4
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc   60

```
gagtggtggg acttgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac        120

gacggccggg gtctggtgct tcctggctgc aagtacctcg gacccttcaa cggactcgac        180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac       240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt        300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag        360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct        420

ggaaagaaga gaccggtaga gccatcaccc cagcgttctc cagactcctc tacgggcatc        480

ggcaagacag gccagcagcc cgcgaaaaag agactcaact ttgggcagac tggcgactca        540

gagtcagtgc ccgaccctca accaatcgga gaacccccg caggcccctc tggtctggga        600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac       660

ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc        720

atcaccacca gcacccgaac ctgggcccctc cccacctaca caaccacct ctacaagcaa        780

atctccaacg gacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc        840

ccctgggggt attttgactt taacagattc cactgccact tctcaccacg tgactggcag        900

cgactcatca acaacaactg gggattccgg cccaagagac tcaacttcaa gctcttcaac        960

atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc       1020

agcacgattc aggtctttac ggactcggaa taccagctcc cgtacgtcct cggctctgcg       1080

caccagggct gcccgcctcc gttcccggcg gacgtcttca tgattcctca gtacgggtac       1140

ctgactctga acaacggcag tcaggccgtg ggccgttcct ccttctactg cctggagtac       1200

tttccttctc aaatgcggag aacgggcaac aactttgagt tcagctacca gtttgaggac       1260

gtgccttttc acagcagcta cgcgcatagc caaagcctgg accggctgat gaacccctc        1320

atcgaccagt acctgtacta cctgtctcgg actcagtcca cgggaggtac cgcaggaact       1380

cagcagttgc tattttctca ggccgggcct aataacatgt cggctcaggc caaaaactgg       1440

ctacccgggc cctgctaccg gcagcaacgc gtctccacga cactgtcgca aaataacaac       1500

agcaactttg cttggaccgg tgccaccaag tatcatctga atggcagaga ctctctggta       1560

aatcccggtg tcgctatggc aacgcacaag gacgacgaag agcgattttt tccatccagc       1620

ggagtcttga tgtttgggaa acaggagct ggaaaagaca cgtggacta tagcagcgtt        1680

atgctaacca gtgaggaaga aatcaaaacc accaacccag tggccacaga acagtacggc       1740

gtggtggccg ataacctgca acagcaaaac gccgctccta ttgtaggggc cgtcaacagt       1800

caaggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatc       1860

tgggccaaga ttcctcacac ggacggcaac tttcatcctt cgccgctgat gggaggcttt       1920

ggactgaaac acccgcctcc tcagatcctg attaagaata cacctgttcc cgcggatcct       1980

ccaactacct tcagtcaagc caagctggcg tcgttcatca cgcagtacag caccggacag       2040

gtcagcgtgg aaattgaatg ggagctgcag aaagagaaca gcaagcgctg gaacccagag       2100

attcagtata cttccaacta taacaaatct gttaatgtgg actttactgt ggacactaat       2160

ggtgtgtatt cagagcctcg ccccattggc accagatacc tgactcgtaa tctgtaa         2217
```

```
<210>  5
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone hu.6

<400>  5
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc         60

gagtggtggg acttgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac        120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac        180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac       240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt        300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag        360
```

```
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
ggaaagaaga gaccggtaga gccatcaccc cagcgttctc cagactcctc tacgggcatc    480
ggcaagacag gccagcagcc cgcgaaaaag agactcaact ttgggcagac tggcgactca    540
gagtcagtgc ccgaccctca accaatcgga gaaccccccg caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660
ggagtgggta gttcctcagg aaaattggcat tgcgattccg catggctggg cgacagagtc    720
atcaccacca gcacccgacc ctgggccctc cccacctaca caaccacct ctacaagcaa    780
atctccaacg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc    840
ccctgggggt attttgactt taacagattc cactgccact ctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg cccaagagac tcaacttcaa gctcttcaac    960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc   1020
agcacgattc aggtctttac ggactcggaa taccagctcc cgtacgtcct cggctctgcg   1080
caccagggct gcccgcctcc gttcccggcg gacgtcttca tgattcctca gtacgggtac   1140
ctgactctga acaacggcag tcaggccgtg ggccgttcct ccttctactg cctggagtac   1200
tttccttctc aaatgcggag aacgggcaac aactttgagt tcagctacca gtttgaggac   1260
gtgccttttc acagcagcta cgcgcatagc caaagcctgg accggctgat gaaccccctc   1320
atcgaccagt acctgtacta cctgtctcgg actcagtcca cgggaggtac cgcaggaact   1380
cagcagttgc tattttctca ggccgggcct aataacatgt cggctcaggc caaaaactgg   1440
ctacccgggc cctgctaccg gcagcaacgc gtctccacga cactgtcgca aaataacaac   1500
agcaactttg cttggaccgg tgccaccaag tatcatctga atggcagaga ctctctggta   1560
aatcccggtg tcgctatggc aacgcacaag gacgacgaag agcgattttt tccatccagc   1620
ggagtcttga tgtttgggaa acagggagct ggaaaagaca cgtggactа tagcagcgtt   1680
atgctaacca gtgaggaaga aatcaaaacc accaacccag tggccacaga acagtacggc   1740
gtggtggccg ataacctgca acagcaaaac gccgctccta ttgtaggggc cgtcaacagt   1800
caaggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatc   1860
tgggccaaga ttcctcacac ggacggcaac tttcatcctt cgccgctgat ggggaggcttt   1920
ggactgaaac acccgcctcc tcagatcctg attaagaata cacctgttcc cgcggatcct   1980
ccaactacct tcagtcaagc caagctggcg tcgttcatca cgcagtacag caccggacag   2040
gtcagcgtgg aaattgaatg ggagctgcag aaagagaaca gcaagcgctg gaacccagag   2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt caatactgag   2160
ggtacttatt cagagcctcg ccccattggc acccgttacc tcacccgtaa cctgtaa      2217
```

```
<210>    6
<211>    2217
<212>    DNA
<213>    new AAV serotype, clone hu.41

<400>    6
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac   180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt    300
caggagcgtc tacaagaaga tacgtctttt ggggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ccggttgagg aagctgctaa gacggctcct    420
ggaaagaaga gaccggtaga accgccacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca    540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660
```

```
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa      780
atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc      840
ccctgggggt attttgactt caacagattc cactgccact tctcaccacg tgactggcag      900
cgactcatca acaacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac      960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccgtcgccaa taaccttacc     1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg     1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac     1140
cttacactga acaatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat     1200
tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac     1260
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc     1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc     1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg     1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac     1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta      1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt     1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt     1680
atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt     1740
gtggtggctg acaacttgca gcaaaccaat acagggccta ttgtgggaaa tgtcaacagc     1800
caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc     1860
tgggccaaga ttcctcacac ggacggcaac ttccacccct taccgctaat gggaggattt     1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct     1980
ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag     2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgttg gaacccagag     2100
attcagtaca cttcaaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag     2160
ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa       2217
```

```
<210>  7
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.38
```

```
<400>  7
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac      120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt       300
caggagcgtc tacaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct      420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480
ggcaagaaag gccagcggcc cgctaaaaag agactgaact ttggtcagac tggcgactca      540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga      600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac      660
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa      780
atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc      840
ccctgggggt attttgactt caacagattc cactgccact tctcaccacg tgactggcag      900
cgactcatca acaacaactg gggattccgg ccaaaaagac tcagcttcaa gcccttcaac      960
```

Page 6

```
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc    1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg    1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac    1140
cttacactga acaatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat    1200
tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac    1260
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc    1320
atcgaccagt acctgcacta cttatccaga actcagtcca caggaggaac tcaaggtacc    1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg    1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac    1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta     1560
aatcccggtg tcgccatggc aaacccacaag gacgacgagg aacgcttctt cccgtcgagt   1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt    1680
atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt     1740
gtggtggctg acaacttgca gcaaaccaat acagggccta ttgtgggaaa tgtcaacagc     1800
caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc     1860
tgggccaaga ttcctcacac ggacggcaac ttccacccctt caccgctaat gggaggattt    1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct     1980
ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag     2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag     2100
attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag     2160
ggaacttatt ctgagcctcg ccccattggt actcgctacc tcacccgtaa tctgtaa       2217
```

```
<210>   8
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone hu.42

<400>   8
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120
gacggccggg tctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac   180
aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagcggctaa gacggctcct    420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag ccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca    540
gagtcagtcc ccgacctctca accaatcgga gaaccaccag caggccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa     780
atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc    840
ccctgggggt attttgactt caacagattc cactgccact ctctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac    960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc   1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg   1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac   1140
cttacactga acaatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat   1200
tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac   1260
```

```
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc    1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc    1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg    1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aagcaacaac    1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta    1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt    1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt    1680
atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt    1740
gtggtggctg acaacttgca gcaaaccaat acagggccta ttgtgggaaa tgtcaacagc    1800
caaggagcct acctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc    1860
tgggccaaga ttcctcacac ggacggcaac ttccacccctt caccgctaat gggaggactt    1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct    1980
ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag    2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag    2100
attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag    2160
ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa     2217
```

```
<210>  9
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.72

<400>  9
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac     120
gacggccggg tctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac     180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct     420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc     480
ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca     540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga     600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac     660
ggagtgggta gttcctcagg aaaattggcat tgcgattcca catggctggg cgacagagtc     720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa     780
atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc     840
ccctgggggt attttgactt caacagattc cactgccact ctcaccacg tgactggcag     900
cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac     960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc    1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg    1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac    1140
cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat    1200
tttccatctc aaatgctgcg aactggaaac aatttttgaat tcagctacac cttcgaggac    1260
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc    1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc    1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg    1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac    1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta    1560
```

```
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt   1620

ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt   1680

atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt   1740

gtggtggctg acaacttgca gcaaaccaat acagggccta ttgtgggaaa tgtcaacagc   1800

caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc   1860

tgggccaaga ttcctcacac ggacggcaac ttccacccctt caccgctaat gggaggattt   1920

ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct   1980

ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag   2040

gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag   2100

attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag   2160

ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>   10
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone hu.37

<400>   10
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac    180

aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240

cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt    300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct    420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc    480

ggcaagaaag ccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca    540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggccctc tggtctggga    600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660

ggagtgggta gttcctcagg aaaattggcat tgcgattcca catggctggg cgacagagtc    720

atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa    780

atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc    840

ccctgggggt attttgactt caacagattc cactgccact ctctcaccacg tgactggcag    900

cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac    960

atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc   1020

agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg   1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac   1140

cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat   1200

tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac   1260

gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc   1320

atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc   1380

cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg   1440

ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac   1500

agcaactttg cttggactgg tgccaccaaa tatcacctga acggaagaga ctctttggta   1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt   1620

ggagtcctga tgttcggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt   1680

atgctaacca gcgaagaaga aattaaaacc actaacccg tagccacaga acaatacggt   1740

gtggtggctg acaacttgca gcaaaccaat acagggccta ttgtgggaaa tgtcaacagc   1800

caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc   1860
```

```
tgggccaaga ttcctcacac ggacggcaac ttccaccctt caccgctaat gggaggattt   1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct   1980
ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag   2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag   2100
attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag   2160
ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa     2217
```

<210> 11
<211> 2217
<212> DNA
<213> new AAV serotype, clone hu.40

<400> 11
```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggtctcgaa acctctcggt ctggttgagg aagctgctaa gacggctcct    420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag ccagcagcc cgctaaaaag agactgagct ttggtcagac tggcgactca    540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa    780
atatccaatg gacatcgggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc    840
ccctgggggt attttgactt caacagattc cactgccact ctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac    960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc   1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg   1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac   1140
cttacactga acaatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat   1200
tttccatctc aaatgctgcg aactggaaac aattctgaat tcagctacac cttcgaggac   1260
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc   1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc   1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg   1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac   1500
agcaactttg cttggactgg tgccaccaaa tatcacctga acggaagaga ctctttggta   1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt   1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt   1680
atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt   1740
gtggtggctg acaacttgca gcaaccaat acagggccta ttgtgggaaa tgtcaacagc   1800
caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc   1860
tgggccaaga ttcctcacac ggacggcaac ttccaccctt caccgctaat gggaggattt   1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct   1980
ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag   2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag   2100
attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag   2160
```

Page 10

```
ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>   12
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone hu.38

<400>   12
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac     120
gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttca cggactcgac     180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct     420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc     480
ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca     540
gagtcagtcc ccgaccctca accaatcgga gaaccacctg caggcccctc tggtctggga     600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac     660
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc     720
atcaccacca gcacccgaac ctgggcccctg cccacctaca acaaccacct ctacaagcaa     780
atatccaatg gacatcgggg agggagcacc aacgacaaca cctacttcgg ctacagcacc     840
ccctgggggt attttgactt caacagattc cactgccact ctcaccacg tgactggcag     900
cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac     960
atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc    1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg    1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac    1140
cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat    1200
tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac    1260
gtgccttttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc    1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc    1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg    1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac    1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta    1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt    1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt    1680
atgctaacca gcgaagaaga aattaaaacc actaaccctg tagcacaga caatacggt    1740
gtggtggctg acaacttgca gcaaccaat acagggccta ttgtgggaaa tgtcaacagc    1800
caaggagcct acctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc    1860
tgggccaaga ttcctcacac ggacggcaac tgccacctt caccgctaat gggaggattt    1920
ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct    1980
ccaacaacgt tcagccaggc gaaattggct ccttcatta cgcagtacag caccggacag    2040
gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag    2100
attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag    2160
ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>   13
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.39

<400>   13
```

```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc        60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac       120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac       180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt       300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag       360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct       420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc       480

ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca       540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga       600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac       660

ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc       720

atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa       780

atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc       840

ccctggggt attttgactt caacagattc cactgccact tctcaccacg tgactggcag       900

cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac       960

atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc      1020

agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg      1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac      1140

cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat      1200

tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac      1260

gtgccttttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc      1320

atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc      1380

cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg      1440

ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac      1500

agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta      1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt      1620

ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt      1680

atgctaacca gcgaagaaga aattaaaaacc actaaccctg tagccacaga acaatacggt      1740

gtggtggctg ataacttgca gcaaaccaat acggggccta ttgtgggaaa tgtcaacagc      1800

caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc      1860

tgggccaaga ttcctcacac ggacggcaac ttccacccctt caccgctaat gggaggattt      1920

ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct      1980

ccaacaacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag      2040

gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag      2100

attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag      2160

ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa        2217
```

```
<210>  14
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.40

<400>  14
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc        60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac       120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac       180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt       300
```

```
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct    420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca    540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660
ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa    780
atatccaatg ggacatcggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc    840
ccctgggggt attttgactt caacagattc cactgccact ctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac    960
atccaggtca aggaggtcac gcaggatgaa ggcaccaaga ccatcgccaa taaccttacc   1020
agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg   1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac   1140
cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat   1200
tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac   1260
gtgcctttcc acagcagcta cgcacacagc cagagcttgg accgactgat gaatcctctc   1320
atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc   1380
cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcgggc taagaactgg   1440
ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac   1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggaagaga ctctttggta   1560
aatcccggtg ttgctatggc aacgcataag gacgacgagg aacgtttctt tccatcgagc   1620
ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta tagcagcgtt   1680
atgctaacca gcgaggaaga aattaaaacc actaaccctg tagccacaga acaatacggt   1740
gtggtggctg acaacttgca gcaagccaat acagggccta ttgtgggaaa tgtcaacagc   1800
caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc   1860
tgggccaaaa ttcctcacac ggacggcaat tttcacccgt ctcctctgat gggcggcttt   1920
ggactgaagc acccacctcc ccagatcctg atcaagaata cgccggtacc tgcggatcct   1980
ccaacgacgt tcagccaggc aaaattggct tccttcatca cgcagtacag caccggccag   2040
gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgatg gaacccagaa   2100
attcagtaca cttccaacta ctacaaatct acaaatgtgg actttgctgt caattctgag   2160
ggtacatatt cagagcctcg ccccattggt actcgttatc tgacacgtaa tctgtaa      2217
```

```
<210>   15
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.64
```

```
<400>   15
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gaccctcaa cggactcgac    180
aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga    600
```

```
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa      780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840
ccctggggg attttgactt taacagattc cactgccact tctcaccacg tgactggcag      900
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc     1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc     1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac     1140
ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200
ttcccctctc agatgctgag aacgggcaac aactttcct tcagctacac tttcgaggac     1260
gtgccttccc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc     1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc     1380
cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg     1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac     1500
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg     1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc     1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactta tagcaacgtg     1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc     1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc     1800
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt     1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980
ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa     2040
gtcagcgtgg agatcgtgtg ggagctgcag aaggagaaca gcaagcgcag gaacccagag     2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag     2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa       2217
```

```
<210>   16
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.68

<400>   16
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac      120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt      300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc      480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca      540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga      600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa      780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840
ccctggggg attttgactt taacagattc cactgccact tctcaccacg tgactggcag      900
```

```
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960

atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc     1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc     1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac     1140

ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200

ttcccctctc agatgctgag aacgggcaac aactttcct tcagctacac tttcgaggac      1260

gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc     1320

atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc     1380

cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg     1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac     1500

agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg      1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccacccagc     1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggacta tagcaacgtg      1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc     1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtggggggc cgtcaacagc     1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt     1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa     2040

gtcagcgtgg tgatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag     2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag     2160

ggtgtttact ctgagcttcg ccccattggc actcgttacc tcacccgtaa tctgtaa       2217
```

```
<210>   17
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.53

<400>   17
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac      120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccctttcaa cggactcgac      180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt       300

caggagcgtc tgcaagaaga tacgtctttt ggggggcaacc tcggcgagc agtcttccag       360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag ccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca       540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga      600

tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660

ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc      720

atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa       780

atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840

ccctggggggt atttgactt taacagattc cactgccact ctcaccacg tgactggcag        900

cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960

atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc     1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc     1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac     1140

ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200
```

```
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac   1260
gtgcctttcc acagcagcta cgtgcacagc cagagtttgg acaggctgat gaatcctctc   1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc   1380
cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg   1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac   1500
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg   1560
aattcgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc   1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactta tagcaacgtg   1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc   1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc   1800
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt   1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt   1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct   1980
ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa   2040
gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag   2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag   2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc ccacccgtaa tctgtaa      2217
```

```
<210>  18
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.52

<400>  18
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag ccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga    600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa     780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc    840
ccctgggggt attttgactt taacagattc cactgccact tctcaccacg tgactggcag     900
cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac    960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa tagcctcacc   1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc   1080
caccaggget gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac   1140
ctgactccca caacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac   1200
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac   1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc   1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc   1380
cagcagttgc tgtcttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg   1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac   1500
```

```
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg    1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc    1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca acgtggacta tagcaacgtg    1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc    1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc    1800
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacttgca gggtcctatt    1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt    1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct    1980
ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa    2040
gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag    2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag    2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>  19
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.46

<400>  19
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt cggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga    600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660
ggagtgggta gttcctcggg aaaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggcctg cccacctaca acaaccacct ctacaagcaa    780
atctccaacg gacctcgggt aggcagcacc aacgacaaca cctactttgg ctacagcacc    840
ccctgggggt attttgactt aacagattc cactgccact tctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac    960
atccaggtca agaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc    1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc    1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac    1140
ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac    1200
ttcccctctc agatgctgag aacgggcaac aactttcct tcagctacac tttcgaggac    1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc    1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc    1380
cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg    1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac    1500
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg    1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc    1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca acgtggacta tagcaacgtg    1680
atgctaacca gcgaggaaga aatcaaggcc accaaccccg tggccacaga acagtatggc    1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc    1800
```

Page 17

```
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt     1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa     2040

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag     2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag     2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa        2217
```

```
<210>    20
<211>    2217
<212>    DNA
<213>    new AAV serotype, clone rh.70

<400>    20
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac      120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180

aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac       240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt       300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca      540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgcctc tagtgtggga       600

tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660

ggagtgggta gttcctcggg aaaattggca tgcgattcca catggctggg cgacagagtc      720

atcaccacca gcacccgaac ctgggccctg cccgcctaca caaccacct ctacaagcaa       780

atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840

ccctgggggt attttgactt taacagattc cactgccact ctcaccacg tgactggcag       900

cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960

atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc     1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc     1080

caccagggct gcctgcctcc gttcccggcg gatgtcttca tgattcctca gtacggctac     1140

ctgactctca caacggtag tcaggccgtg gacgttcct ccttctactg cctggagtac       1200

ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac     1260

gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc     1320

atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc     1380

cagcagttgc tgtttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg      1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac     1500

agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg       1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc     1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactа tagcaacgtg      1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc      1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc      1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt     1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa     2040

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag     2100
```

Page 18

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag   2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tttgtaa   2217

<210>   21
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.61

<400>   21
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc   60

gagtggtggg acctgaaacc tggagccccg aaacccaagg ccaaccagca aaagcaggac   120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttca cggactcgac   180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240

cagcagctca aagcgggtga caatccgtac ctgcggtata atcacgccga cgccgagttt   300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct   420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc   480

ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca   540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga   600

tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac   660

ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc   720

atcaccacca gcacccgaac ctgggcccctg cccacctaca acaaccacct ctacaagcaa   780

atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc   840

ccctgggggt attttgactt taacagattc cactgccact tctcaccacg tgactggcag   900

cgacccatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac   960

atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc   1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc   1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac   1140

ctgactctca caacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac   1200

ttcccctctc agatgctgag aacgggcaac aactttcct tcagctaccc tttcgaggac   1260

gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc   1320

atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc   1380

cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg   1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac   1500

agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg   1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc   1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactta tagcaacgtg   1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc   1740

gtggtggctg ataacctaca gcagcaagac accgctccta ttgtggggggc cgtcaacagc   1800

cagggagcct acctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt   1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt   1920

ggacttaaac atccgcctcc tcaggtcctc atcaaaaaca ctcctgttcc tgcggatcct   1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa   2040

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag   2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag   2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa   2217

<210>   22
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.51

```
<400> 22
atggttgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcagggc     120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac     180

aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240

cagcagctta aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagctt      300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag     360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct     420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc     480

ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca     540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga     600

tctggtacaa tggctgcagg cggtggcgcg ccaatggcag acaataacga aggtgccgac     660

ggagtgggta gttcctcggg aaaattggcat tgcgattcca catggctggg cgacagagtc     720

atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa     780

atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc     840

ccctgggggt attttgactt taacagattc cactgccact ctcaccacg tgactggcag      900

cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac     960

atccaggtca agaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc    1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc    1080

caccagggct gccagcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac    1140

ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac    1200

ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac    1260

gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc    1320

atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc    1380

cagcagttgc tgtttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg    1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac    1500

agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg    1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc    1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactta tagcaacgtg    1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc    1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc    1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt    1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt    1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct    1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa    2040

gtcagcgtgg agatcgagtg ggagccgcag aaggagaaca gcaagcgctg gaacccagag    2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag    2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa      2217


<210>  23
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.50

<400>  23
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac     120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac     180

aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt      300
```

```
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgccggaaag agactcaatt tcggtcagac tggcgactca      540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga      600

tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660

ggagtgggta gttcctcggg aaaattggcat tgcgattcca catggctggg cgacagagtc      720

atcaccacca gcacccgaac ctgggcccctg cccacctaca acaaccacct ctacaagcaa      780

atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840

ccctgggggt attttgactt taacagattc cactgccact tctcaccacg tgactggcag      900

cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960

atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc      1020

agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc      1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac      1140

ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac      1200

ttcccctctc agatgctgag aacgggcaac aactttttcct tcagctacac tttcgaggac      1260

gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc      1320

gtcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc      1380

cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg      1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac      1500

agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg      1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc      1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca acgtggacta tagcaacgtg      1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc      1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc      1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt      1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt      1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct      1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa      2040

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gagcccagag      2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag      2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>  24
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone hu.39

<400>  24
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac      120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata atcacgccga cgccgagttt      300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcggac tggcgactca      540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga      600
```

```
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtt    720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa    780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc    840
ccctgggggt atcttgactt taacagattc cactgccact tctcaccacg tgactggcag    900
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac    960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatgccaa taacctcgcc     1020
agcaccatcc aggtgtttac ggactcggaa taccagccgc cgtacgtcct cggctctgcc     1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac     1140
ctgactctca caacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac     1260
gtgccttttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc     1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc     1380
cagcagttgc tgttttctcg ggccgggcct agcaacatgt cggctcaggc cagaaactgg     1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac     1500
agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg      1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc     1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggacta tagcaacgtg      1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc     1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ctgtgggggc cgtcaacagc     1800
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt      1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980
ccaacagcgt tcaaccaggc caagctgaat tctttcatcg cgcagtacag caccggacaa     2040
gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag     2100
attcagtata cttccaacta ctacaaatct acaaatgcgg actttgctgt taatactgag     2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa      2217
```

<210> 25
<211> 2217
<212> DNA
<213> new AAV serotype, clone rh.49

<400> 25
```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac     120
gacggccggg gtctggtgct tcctggctac aagtacctcg acccttcaa cggactcgac      180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240
cagcagctca aagcgggtga caatccgcac ctgcggtata tcacgccga cgccgagttt      300
caggagcgtc tgcaagaaga tacgtctttt ggggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct     420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc     480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca     540
gagtcagtcc ccgaccctca acttatcgga gaacctccag cagcgccctc tagtgtggga     600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac      660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggccctg cccacctaca acaaccacct ctacaagcaa      780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840
ccctgggggt attttgactt taacagattc cactgccact tctcaccacg tgactggcag      900
```

```
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc     1020
agcaccatcc aggtgtttac ggactcggag taccagctgc cgtacgtcct cggctctgcc     1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggcaac     1140
ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200
ttcccctctc agatgctgag aacgggcaac aactttcct tcagctacac tttcgaggac      1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc     1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc     1380
cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg     1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac     1500
agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg      1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc     1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca catgggcta tagcaacgtg      1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc     1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtggggc cgtcaacagc      1800
cagggagcct acctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt      1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct     1980
ccaacagcgt tcaaccaggc caagctgaat ctttcatca cgcagtacgg caccggacaa      2040
gtcagcgtgg agatcgagtg gggagctgcag aaggagaaca gcaagcgctg gaacccagag    2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag     2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa        2217
```

```
<210>  26
<211>  2217
<212>  DNA
<213>  new AAV serotype, clone rh.57
```

```
<400>  26
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60
gagtggtggg cgctgaaacc tggagccccg aagcccaaag ccaaccagca aaagcaggac       120
gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac      180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240
cagcagctgc aggcggggtga caatccgtac ctgcggtata atcacgccga cgccgagttt      300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag       360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct       420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc       480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca       540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga       600
tctggtacaa tggctgcagg cggtggcgcg ccaatggcag acaataacga aggtgccgac       660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc       720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa        780
acctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc       840
ccctgggggt attttgactt taacagattc cactgccact ctcaccacg tgactggcag        900
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac       960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc      1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc      1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac     1140
ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac     1200
```

```
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac    1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc    1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc    1380
cagcagttgc tgttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg    1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac    1500
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg    1560
aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc    1620
ggcatcctca tgtttggcaa gcagggagct ggaaaagaca cgtggactta tagcaacgtg    1680
atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc    1740
gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc    1800
cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt    1860
tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt    1920
ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct    1980
ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa    2040
gtcagcgcgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag    2100
attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag    2160
ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa       2217
```

<210> 27
<211> 2217
<212> DNA
<213> new AAV serotype, clone rh.58

<400> 27
```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac     120
gacggccggg tctggtgct tcctggctac aagtacctcg acccttcaa cggactcgac       180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt      300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct     420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc     480
ggcaagaaag ccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca     540
gagtcagtcc ccgaccctca accaatcgga gaacctccag cagcgccctc tagtgtggga     600
tctggtacaa tggccgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac     660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc     720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa      780
atctccaacg gacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc      840
ccctgggggt attttgactt taacagattc cactgccact ctcaccacg tgactggcag      900
cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac      960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc    1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc    1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac    1140
ctgactctca caacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac    1200
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac    1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc    1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cgggaggcac agcgggaacc    1380
cagcagctgc tgtttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg     1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac    1500
```
Page 24

```
agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg     1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc     1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca acgtggacta tagcaacgtg     1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc     1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtggggggc cgtcaacagc     1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt     1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt     1920

ggacttaaac atccgcctcc tcagatcctc atcaaaagca ctcctgttcc tgcggatcct     1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa     2040

gtcagcgtgg agatcgagtg gggagctgcag aaggagaaca gcaagtgctg gaacccagag     2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag     2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa      2217
```

```
<210>   28
<211>   2196
<212>   DNA
<213>   new AAV serotype, clone pi.1

<400>   28
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg cgctgaaacc tggagccccg caacccaaag ccaaccagca aaagcaggac      120

gacggccggg tctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac        180

aaggggggagc ccgtcaacga ggcggacgcc gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt        300

caagagcgtc tgcaagaaga tacgtccttt gggggcaacc tcgggcgagc agtcttccag       360

gccaaaaaga gggtactcga gcctctgggt ctggttgagg aaggcgctaa gacggctcct       420

ggaaagaagc ggccagtaga accggactcc agctcgggca tcggcaagtc aggccagcag       480

cccgcgaaaa agagactgaa ttttgggcag actggcgact cagagtcagt gcctgacccc      540

caacctctct cagaaccacc gcgaggtccc tctggtctgg gatctggtac aatggctgct       600

ggcggtggcg ctccaatggc agacaataac gaaggcgccg acggagtggg taatgtctca        660

ggaaattggc attgcgattc cacatggctg ggcgaccgag tcatcaccac cagcactcgg       720

acctgggccc tccccaccta caacaaccac ctctacaagc aaatctccaa cgggacctcg       780

ggaggcagca gcaacgacaa cacctacttt ggctacagca cccctgggg gtattttgac        840

tttaacagat tccactgcca cttttcacca cgtgactggc agcgactcat caacaacaac        900

tggggggttcc ggcccaagaa gctcaacttc aagctcttca acatccaggt caaggaggtc       960

acccagaatg aaggcaccaa gaccatcgcc aataacctca ccagcacggt gcaggtcttt      1020

acggactcgg agtaccagct cccgtacgtg ctcggctctg cccaccaggg ctgcctgcct      1080

ccgttcccgg cggacgtgtt catgattccg cagtacgggt acctgacgct gaacaacggg      1140

agccaggccg tggggcgatc ctccttctac tgcctggagt actttccctc gcagatgctg      1200

agaacgggca caactttac cttcagctac accttcgagg acgtgccctt ccacagcagc       1260

tacgcgcaca gccagagcct ggaccggctg atgaacccgc tgattgacca gtacctgtac      1320

tacctgtctc ggactcagac caacgggacc aatgccacgc agactctgtt gtttgctcag       1380

gccgggcctc agaacatgtc ggctcaggcc aagaactggc tgcctggtcc ttgctatcgg      1440

cagcagcgcg tctctacgac agtgtcgcaa aacaacaaca gcaactttac ctggaccggg      1500

gcgaccaagt accacctgaa cggccgagac tccctggtga gccccggtgt cgccatggca      1560

acgcacaagg acgacgagga cgcttcttc ccgagcagcg gggtcctgat gtttggcaag      1620

cagggcgctg aaaggacaa tgtcgagtac accaacgtga tgctcaccag cgaggaggag      1680

atcaagacca ccaaccctgt ggccacggag cagtacggcg tggtggctga caatctgcag      1740

cagaccaact cagctcccat tgtgggggca gtcaacagcc aggggggcctt acccggtatg      1800
```

```
gtctggcaga accgggacgt gtacctgcag ggtcccatct gggccaagat cccgcatacg   1860

gacggcaact ttcacccgtc tcctctcatg ggcggctttg gactgaaaca cccgcctccc   1920

cagatcctga tcaaaaacac gccggtacct gcggatcccc cggtgaactt tacggacgct   1980

aagctggcga gtttcatcac gcagtacagc accgggcagg tcagcgtgga gattgagtgg   2040

gagctgcaga aggagaacag caagcgctgg aatcccgaga ttcagtacac ttccaattat   2100

tataaatcag ctaatgtgga ctttgccgtc aatgcagatg gtgtatatag tgaaccccgc   2160

cccattggca ctcgttacct cacccgtaat ctgtaa                            2196
```

<210> 29
<211> 2196
<212> DNA
<213> new AAV serotype, clone pi.3

<400> 29
```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60

gagtggtggg cgctgaaacc tggagccccg caacccaaag ccaaccagca aaagcaggac    120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180

aagggggagc ccgtcaacga ggcggacgcc gcggccctcg agcacgacaa ggcctacgac    240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt    300

caagagcgtc tgcaagaaga tacgtccttt gggggcaacc tcgggcgagc agtcttccag    360

gccaaaaaga gggtactcga gcctctgggt ctggttgagg aaggcgctaa gacggctcct    420

ggaaagaagc ggccagtaga accggactcc agctcgggca tcggcaagtc aggccagcag    480

cccgcgaaaa agagactgaa ttttgggccg actggcgact cagagtcagt gcctgacccc    540

caacctctct cagaaccacc tgcaggtccc tctggtctgg gatctggtac aatggctgca    600

ggcggtggcg ctccaatggc agacaataac gaaggcgccg acggagtggg taatgtctca    660

ggaaattggc attgcgattc cacatggctg ggcgaccgag tcatcaccac cagcactcgg    720

acctgggccc tcccccaccta caacaaccac ctctacaagc aaatctccaa cgggacctcg    780

ggaggcagca gcaacgacaa cacctacttt ggctacagca ccccctgggg gtattttgac    840

tttaacagat tccactgcca cttttcacca cgcgactggc agcgactcat caacaacaac    900

tggggattcc ggcccaagaa gctcaacttc aagctcttca catccaggt caaggaggtc    960

acccagaatg aaggcaccaa gaccaccgcc ataacctca ccagcacggt gcaggtcttt   1020

acggactcgg agtaccagct cccgtacgtg ctcggctctg cccaccaggg ctgcctgcct   1080

ccgttcccgg cggacgtgtt catgattccg cagtacgggt acctgacgct gaacaacggg   1140

agccaggccg tggggcgatc ctccttctac tgcctggagt actttcccctc gcagatgctg   1200

agaacgggca acaactttac cttcagctac accttcgagg acgtgcccctt ccacagcagc   1260

tacgcgcaca gccagagcct ggaccggctg atgaacccgc tgattgacca gtacctgtac   1320

tacctgtctc ggactcagac caacgggacc aatgccacgc agactctgtt gtttgctcag   1380

gccgggcctc agaacatgtc ggctcaggcc aagaactggc tgcctggtcc ttgctatcgg   1440

cagcagcgcg tctctacggc agtgtcgcaa aacaacaaca gcaactttac ctggaccggg   1500

gcgaccaagt accacctgaa cggccgagac tccctggtga accccggtgt cgccatggca   1560

acgcacaagg acgacgagga gcgcttcttc ccgagcagcg gggtcctgat gtttggcaag   1620

cagggcgctg aaaggacaa tgtcgagtac accaacgtga tgctcaccag cgaggaggag   1680

atcaagacca ccaaccctgt ggccacggag cagtacggtg tggtggctga caatctgcag   1740

cagaccaact cggctcccat tgtggggggca gtcaacagcc aggggggcctt acccggtatg   1800

gtctggcaga accgggacgt gtacctgcag ggtcccatct gggccaagat cccgcatacg   1860

gacggcaact ttcacccgtc tcctctcatg ggcggctttg gactgaaaca cccgcctccc   1920

cagatcctga tcaaaaacac gccggtacct gcggatcccc cggtgaactt tacggacgct   1980

aagctggcga gtttcatcac gcagtacagc accgggcagg tcagcgtgga gattgagtgg   2040

gagctgcaga aggagaacag caagcgctgg aatcccgaga ttcagtacac ttccaattat   2100
```

Page 26

tataaatcag ctaatgtgga ctttgccgtc aatgcagatg gtgtatatag cgaaccccgc   2160

cccattggca ctcgttacct cacccgtaat ctgtaa   2196

<210>   30
<211>   2196
<212>   DNA
<213>   new AAV serotype, clone pi.2

<400>   30
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc   60

gagtggtggg cgctgaaacc tggagccccg caacccaaag ccaaccagca aaagcaggac   120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac   180

aaggggggagc ccgtcaacga ggcggacgcc gcggccctcg agcacgacaa ggcctacgac   240

cagcagctca aagcgggtga caatccgtac ctgcggtata atcacgccga cgccgagttt   300

caagagcgtc tgcaagaaga tacgtccttt ggggggcaacc tcgggcgagc agtcttccag   360

gccaaaaaga gggtactcga gcctctgggt ctggttgagg aaggcgctaa gacggctcct   420

ggaaagaagc ggccagtaga accggactcc agctcgggca tcggcaagtc aggccggcag   480

cccgcgaaaa agagactgaa ttttgggcag actggcgact cagagtcagt gcctgacccc   540

caacctctct cagaaccacc cgcaggtccc tctggtctgg gatctggtac aatggctgca   600

ggcggtggcg ctccaatggc agacaataac gaaggcgccg acggagtggg taatgcctca   660

ggaaattggc attgcgattc cacatggctg ggcgaccgag tcatcaccac cagcactcgg   720

acctgggccc tccccaccta caacaaccac ctctacaagc aaatctccaa cgggacctcg   780

ggaggcagca gcaacgacaa cacctacttt ggctacagca ccccctgggg gtattttgac   840

tttaacagat tccactgcca cttttcacca cgtgactggc agcgactcat caacaacaac   900

tggggattcc ggcccaagag gctcaacttc aagctcttca catccaggt caaggaggtc   960

acccagaatg aaggcaccaa gaccatcgcc aataacctca ccagcacggt gcaggtcttt   1020

acggactcga gtaccagct cccgtacgtg ctcggctctg cccaccaggg ctgcctgcct   1080

ccgttcccgg cggacgtgtt catgattccg cagtacgggt acctgacgct gaacaacggg   1140

agccaggccg tggggcgatc ctccttctac tgcctggagt actttccctc gcagatgctg   1200

agaacgggca caactttac cttcagctac accttcgagg acgtgccctt ccacagcagc   1260

tacgcgcaca gccagagcct ggaccggctg atgaacccgc tgattgacca gtacctgtac   1320

tacctgtctc ggactcagac caacgggacc aatgccacgc agactctgtt gtttgctcag   1380

gccgggcctc agaacatgtc ggctcaggcc aagaactggc tgcctggtcc ttgctatcgg   1440

cagcagcgcg tctctacgac agtgtcgcaa aacaacaaca gcaactttac ctggaccggg   1500

gcgaccaagt accacctgaa cggccgagac tccctggtga accccggtgt cgccatggca   1560

acgcacaagg acgacgagga gcgcttcttc ccgagcagcg gggtcctgat gtttggcaag   1620

cagggcgctg gaaaggacaa tgtcgagtac accaacgtga tgctcaccag cgaggaggag   1680

atcaagacca ccaaccctgt ggccacggag cagtacggtg tggtggctga caatctgcag   1740

cagaccaact cggctcccat tgtgggggca gtcaacagcc aggggggcctt acccggtatg   1800

gtctggcaga ccgggacgt gtacctgcag ggtcccatct gggccaagat cccgcatacg   1860

gacggcaact tcacccgtc tcctctcatg ggcggctttg gactgaaaca cccgcctccc   1920

cagatcctga tcaaaaacac gccggtacct gcggatcccc cggtgaactt tacggacgct   1980

aagctggcga gtttcatcac gcagtacagc accgggcagg tcagcgtgga gattgagtgg   2040

gagctgcaga aggagaacag caagcgctgg aatcccgaga ttcagtacac ttccaattat   2100

tataaatcag ctaatgtgga ctttgccgtc aatgcagatg gtgtatatag tgaaccccgc   2160

cccattggca ctcgttacct cacccgtaat ctgtaa   2196

<210>   31
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone rh.60

<400> 31

```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcac    60
gagtggtggg acccgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac   120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac   180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240
cagcagctca aagcgggtga caatccgtac ctgcggtata atcacgccga cgccgagttt   300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct   420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc   480
ggcaagaaag ccagcagcc cgccagaaag agactcaatt cggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga   600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac   660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc   720
atcaccacca gcacccgaac ctgggcctg cccacccaca caaccacct ctacaagcaa    780
atctccaacg ggacctcggg aggcagcacc aacgacaacg tctacttcgg ctacagcacc   840
ccctgggggt attttgactt caacagattc cactgtcact tctcaccacg tgaccggcag   900
cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac   960
atccaggtca agaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc  1020
agcaccatcc aggtgtttac ggactcggaa taccagctgc cgtacgtcct cggctctgcc  1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcctca gtacggctac  1140
ctgactctca acaacggtag tcaggccgtg ggacgttcct ccttctactg cctggagtac  1200
ttcccctctc agatgctgag aacgggcaac aacttttcct tcagctacac tttcgaggac  1260
gtgcctttcc acagcagcta cgcgcacagc cagagtttgg acaggctgat gaatcctctc  1320
atcgaccagt acctgtacta cctgtcaaga acccagtcta cggaaggcac agcgggaacc  1380
cagcagttgc tgtttttctca ggccgggcct agcaacatgt cggctcaggc cagaaactgg  1440
ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac  1500
agcaactttg cctggactgg tgccaccaag tatcatctga cggcagaga ctctctggtg   1560
aatccgggcg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc  1620
ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta  1680
atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact  1740
gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag  1800
ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg  1860
gccaagattc tcacacggga cggcaacttt caccgtctc cgctgatggg cggctttgga  1920
ctgaagcatc ctcagatcct gatcaaaaac actcctgttc ctgctaatcc cccggaggtg  1980
tttacgcctg ccaagtttgc ttctttcatc acacagtaca gcaccggcca ggtcagcgtg  2040
gagatcgagt gggagctgca gaaggagaac agcaagcgct ggaacccaga gattcagtat  2100
acctccaatt ttgacaaaca gactggtgtg gactttgccg ttgacagcca gggtgtttat  2160
tctgagcctc gccccattgg tactcgttac ctcacccgta atctgtaa    2208
```

<210> 32
<211> 2214
<212> DNA
<213> new AAV serotype, clone rh.48

<400> 32

```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac   120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac   180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240
```

```
    gagtagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt      300

    caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

    gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct      420

    ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480

    ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca      540

    gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga      600

    tctggtacaa tggctgcagg cggtggcgca ccaatggctg acaataacaa gggcgccgac      660

    ggagtgggta tgcctcagg aaaattggcat tgcgattcca catggctggg cgacagagtc      720

    atcaccacca gcacccgaac ctgggctttg cccacctaca caaccacct ctacaagcaa       780

    atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcaccccc      840

    tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg      900

    ctcatcaaca gcaactgggg attccggccc aagaagctca acttcaagct gttcaacatc      960

    caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc     1020

    acggttcagg tctttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac    1080

    cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg     1140

    actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc     1200

    ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt     1260

    cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc     1320

    gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat     1380

    cgggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg     1440

    ctgcctggac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac     1500

    agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt     1560

    aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc     1620

    ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta     1680

    atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact     1740

    gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag     1800

    ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg     1860

    gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga     1920

    ctgaagcatc cgcctcctca gatcctgatc aaaaacactc ctgttcctgc taatcccccg     1980

    gaggtgttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc     2040

    agcgtggaga tcgagtggga gctgcagaag gagaacagca gcgctggaa cccagagatt     2100

    cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt     2160

    gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa           2214
```

```
<210>  33
<211>  2214
<212>  DNA
<213>  new AAV serotype, clone rh.62

<400>  33
    atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

    gagtggtggg acctgaaacc tggagcccc aagcccaagg ccaaccagca gaagcaggac        120

    gacggccggg tctggtgct tcctggctac aagtacctcg gaccacttcaa cggactcgac        180

    aagggggagc ccgtcaacgc ggcggacgca gcggcccctcg agcacgacaa ggcctacgac       240

    cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttc       300

    caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag       360

    gccaagaagc gggttctcga acctctcggt ctggctgagg aagctgctaa gacggctcct       420

    ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc       480

    ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca       540
```

```
gagtcagtcc ccgaccctca accaatcgga gagccaccag caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgca ccaatggctg acaataacaa gggcgccgac    660
ggagtgggta atgcctcagg aaaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggctttg cccacctaca acaaccacct ctacaagcaa    780
atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc     840
tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg    900
ctcatcaaca caaactgggg attccggccc aagaagctca acttcaagct gttcaacatc    960
caggtcaagg aggtcacaac gggtgacggc gtcacgacca tcgccaataa ccttaccagc   1020
acggttcagg tctttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac   1080
cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg   1140
actctgaaca atgacagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc   1200
ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt   1260
cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc   1320
gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat   1380
cgggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg   1440
ctgcctggac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac   1500
agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt   1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc   1620
ggagtcctga ttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta   1680
atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact   1740
gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag   1800
ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg   1860
gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga   1920
ctgaagcatc cgcctcctca gatcctgatc aaaaacactc tgttcctgc taatcccccg   1980
gaggtgtttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc   2040
agcgtggaga tcgagtggga gctgcagaag gagaacagca agcgctggaa cccagagatt   2100
cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt   2160
gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa          2214
```

```
<210>  34
<211>  2214
<212>  DNA
<213>  new AAV serotype, clone rh.44

<400>  34
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aaggggggagc ccgtcagcgc ggcggacgca gcggccctcg agcacgacaa ggcctgcgac    240
cagcggctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct    420
ggaaagaagg gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca    540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga    600
tctggtacaa tggctgcagg cggtggcgca ccaatggctg acaataacga gggcgccgac    660
ggagtgggta atgcctcagg aaaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggctttg cccacctaca acaatcacct ctacaagcaa    780
atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc     840
```

```
tggggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg      900
ctcatcaaca acaactgggg attccggccc aagaagctca acttcaagct gttcaacatc      960
caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc     1020
acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac     1080
cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg     1140
actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc     1200
ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt     1260
cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc     1320
gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat     1380
cgggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg     1440
ctgcctggac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac     1500
agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt     1560
aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc     1620
ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta     1680
atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact     1740
gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag     1800
ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg     1860
gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga     1920
ctgaagcatc cgcctcctca gatcctgatc aaaaacactc tgttcctgc taatcccccg     1980
gaggtgtttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc     2040
agcgtggaga tcgagtggga gctgcagaag gagaacagca gcgctggaa cccagagatt     2100
cagtatacct ccaattttga cgaacagact ggtgtggact ttgccgttga cagccagggt     2160
gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa          2214
```

<210>   35
<211>   2214
<212>   DNA
<213>   new AAV serotype, clone rh.65

<400>   35

```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac      120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180
aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt      300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct      420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480
ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca      540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggccctc tggtctggga      600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac      660
ggagtgggta atgcctcagg aaattggcat gcgattcca catggctggg cgacagagtc      720
atcaccacca gcacccgaac ctgggctttg cccacctaca caaccacct ctacaagcaa      780
atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc      840
tggggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg      900
ctcatcaaca acaactgggg attccggccc aagaagctca acttcaagct gttcaacatc      960
caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc     1020
acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac     1080
cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg     1140
```

```
actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc    1200

ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt    1260

cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc    1320

gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat    1380

cgggaactgc agtttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg    1440

ctgcctagac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac    1500

agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt    1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc    1620

ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta    1680

atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact    1740

gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag    1800

ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggt tcccatctgg    1860

gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga    1920

ctgaagcatc cgcctcctca gatcctgatc aaaaacactc ctgttcctgc taatcccccg    1980

gaggtgtttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc    2040

agcgtggaga tcgagtggga gctgcagaag gagaacagca agcgctggaa cccagagatt    2100

cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt    2160

gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa    2214
```

<210>   36
<211>   2214
<212>   DNA
<213>   new AAV serotype, clone rh.67

<400>   36

```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac    120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240

cagcagctca aagcgggtga caatccgtac ctgcggtata accatgccga cgccgagttt    300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcctccag    360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct    420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacggggcatc    480

ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca    540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctgggga    600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac    660

ggagtgggta atgcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc    720

atcaccacca gcacccgaac ctgggctttg cccacctaca caaccacct ctacaagcaa    780

atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc    840

tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg    900

ctcatcaaca caaactgggg attccggccc aagaagctca acttcaagct gttcaacatc    960

caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc    1020

acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac    1080

cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg    1140

actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc    1200

ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt    1260

cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc    1320

gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat    1380

cgggaactgc agtttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg    1440
```

```
ctgcctggac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac   1500

agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt   1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc   1620

ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta   1680

atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact   1740

gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag   1800

ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg   1860

gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga   1920

ctgaagcatc cgcctcctca gatcctgatc aaaaacactc ctgttcctgc taatcccccg   1980

gaggtgttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc   2040

agcgtggaga tcgagtggga gctgcagaag gagaacagca gcgctggaa cccagagatt   2100

cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt   2160

gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa          2214
```

```
<210>  37
<211>  2214
<212>  DNA
<213>  new AAV serotype, clone rh.55

<400>  37
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60

gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccettcaa cggactcgac    180

aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240

cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgccga cgccgagttt     300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420

ggaaagaaga gaccggtaga gccgtcacca cagcgttccc cgactcctc cacgggcatc     480

ggcaagaaag ccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca     540

gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgcctc tagtgtggga     600

tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660

ggagtgggta gttcctcggg aaaattggcat tgcgattcca cacggctggg cgacagagtc    720

atcaccacca gcacccggac ctgggctttg cccacctaca caaccacct ctacaagcaa     780

atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcaccccc    840

tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg    900

ctcatcaaca caaactgggg attccggccc aagaagctca acttcaagct gttcaacatc    960

caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc   1020

acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac   1080

cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg   1140

actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc   1200

ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt   1260

cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc   1320

gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat   1380

cgggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg   1440

ctgcctggac cttgcttccg gcaacgaaga gtctccaaga cgctggatca aaacaacaac   1500

agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt   1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc   1620

ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta   1680

atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact   1740
```

Page 33

```
gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag   1800
ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg   1860
gccaagattc ctcacacgga cggcaacttt cacccgtctc cgctgatggg cggctttgga   1920
ctgaagcatc cgcctcctca gatcctgatc aaaaacactc ctgttcctgc taatcccccg   1980
gaggtgttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc   2040
agcgtggaga tcgagtggga gctgcagaag gagaacagca agcgctggaa cccagagatt   2100
cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt   2160
gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa          2214
```

<210> 38
<211> 2217
<212> DNA
<213> new AAV serotype, clone rh.47

<400> 38
```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagcacctcg gacccttcaa cggactcgac    180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata tcacgctga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
ggaaagaaga gaccggtaga gccgtcacca cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag ccagcagcc cgccagaaag agactcaatt cggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctatcgga gaacctccag cagcgccctc tagtgtggga    600
tctggtacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660
ggagtgggta gttcctcggg aaattggcat tgcgattcca catggctggg cgacagagtc    720
atcaccacca gcacccgaac ctgggccctg cccacctaca caaccacct ctacaagcaa    780
atctccaacg ggacctcggg aggcagcacc aacgacaaca cctactttgg ctacagcacc    840
ccctgggggt attttgactt aacagattc cactgccact tctcaccacg tgactggcag    900
cgactcatca caacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac    960
atccaggtca aagaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc   1020
agcacggttc aggtcttttc ggactcggaa taccagctgc cctacgtcct cggctccgca   1080
caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac   1140
ctgactctga acaatggcag ccaatcggtg ggtcgttcct ctttctactg cctggaatat   1200
ttcccttctc aaatgctgag aacgggcaac aacttcacct tcagctacac cttcgaggac   1260
gttcccttcc acagcagcta cgcacacagc cagagcctgg accggctgat gaatcctctt   1320
atcgaccagt acctgtatta cctggccaga acacagagca cgcaggagg cacagctggc   1380
aatcgggaac tgcagtttta tcagggcggg cctaccacca tggccgaaca agccaaaaac   1440
tggctgcctg accttgctt ccggcaacaa agagtctcca agacgctgga tcaaaacaac   1500
aacagcaact ttgcttggac tggtgccacc aaataccatc taaatggaag aaattcattg   1560
gttaatcccg tgtcgccat ggcaacccac aaggacgacg aggaacgctt cttcccttcg   1620
agcggagtcc tgattttttgg aaaaactgga gcagctaata agactacact ggaaaatgtg   1680
ttaatgacaa atgaagagga aattcgtcct accaacccgg tagccaccga ggaatacggg   1740
actgttagca gcaacctgca ggcggctaac actgcagccc agacacaagt tgtcaacaac   1800
cagggagcct tacctggtat ggtctggcag aaccgggacg tgtacctgca gggtcccatc   1860
tgggccaaga ttcctcacac ggacggcaac tttcacccgt ctccgctgat gggcggcttt   1920
ggactgaagc atccgcctcc tcagatcctg atcaaaaaca ctcctgttcc tgctaatccc   1980
ccggaggtgt ttacgcctgc caagtttgct tctttcatca cagtacag caccggccag   2040
```

gtcagcgtgg acgatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag   2100

attcagtata cctccaattt tgacaaacag actggtgtgg actttgccgt tgacagccag   2160

ggtgtttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa   2217

<210> 39
<211> 2214
<212> DNA
<213> new AAV serotype, clone rh.69

<400> 39
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc   60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac   120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac   180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt   300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct   420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc   480

ggcaagaaag ccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca   540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga   600

tctggtacaa tggctgcagg cggtggcgcc ccaatggcag acaataacga aggcgccgac   660

ggagtgggta atgcctcagg aaattggcat gcgattccca tggctgggg cgacagagtc   720

atcaccacca gcacccgaac ctgggcttttg cccacctaca caaccacct tacaagcaa   780

atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc   840

tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg   900

ctcatcaaca caaactgggg attccggccc aagaagctca acttcaagct gttcaacatc   960

caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc   1020

acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac   1080

cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg   1140

actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc   1200

ccttctcaaa tgctgagaac gggcaacaac ttcaccatca gctacacctt cgaggacgtt   1260

cccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc   1320

gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat   1380

caggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg   1440

ctgcctggac cttgcttccg gcaacaaaga gtctccaaga cgctggatca aaacaacaac   1500

agcaactttg cttggactgg tgccaccaaa taccatctaa atggaagaaa ttcattggtt   1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccttcgagc   1620

ggagtcctga tttttggaaa aactggagca gctaataaga ctacactgga aaatgtgtta   1680

atgacaaatg aagaggaaat tcgtcctacc aacccggtag ccaccgagga atacgggact   1740

gttagcagca acctgcaggc ggctaacact gcagcccaga cacaagttgt caacaaccag   1800

ggagccttac ctggtatggt ctggcagaac cgggacgtgt acctgcaggt tcccatctgg   1860

gccaagattc tcacacagga tggcaacttt cacccgtctc ctttaatggg cggctttgga   1920

cttaaacatc cgcctcctca gatcctcatc aaaaacactc tgttcctgc ggatcctcca   1980

acagcgttca accaggccaa gctgaattct ttcatcacgc agtacagcac cggacaagtc   2040

agcgtggaga tcgagtggga gctgcagaag gagaacagca gcgctggaa cccagagatt   2100

cagtatactt ccaactacta caaatctaca aatgtggact ttgctgttaa tactgagggt   2160

gtttactctg agcctcgccc cattggcact cgttacctca cccgtaatct gtaa   2214

<210> 40
<211> 2214
<212> DNA

<213> new AAV serotype, clone rh.54

<400> 40

```
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca gaagcaggac   120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac   180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt   300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct   420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc   480
ggcaagaaag ccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca   540
gagtcagtcc ccgaccctca acctctcgga gaaccaccag caggcccctc tggtctggga   600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac   660
ggagtgggta atgcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc   720
atcaccacca gcacccgaac ctgggctttg cccacctaca caaccacct ctacaagcaa   780
atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccc   840
tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcga   900
ctcatcaaca caaactgggg attccggccc aagaagctca acttcaagct cttcaacatc   960
caagtcaagg aggtcacgac gaatgacggc gtcacgacca tcgctaataa ccttaccagc  1020
acggttcagg tcttttcgga ctcggagtac cagctgccgt acgtcctcgg ctctgcccac  1080
cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttcctcagta cggctacctg  1140
actctgaaca atggcagcca atcggtggga cgttcatcct tctactgcct ggaatacttc  1200
ccttctcagg tgctgagaac gggtaacaac ttcaccttca gttacacctt cgaggacgtg  1260
cctttccaca gcagctacgc gcacagccag agcctagacc ggctgatgaa tccccctcatc  1320
gaccagtacc tgtattacct ggctagaaca cagagtaacc aggaggcac atctggcaat  1380
cgggaactgc agttttacca gggcgggcct tccaccatgg ccgaacaagc caagaactgg  1440
ttacctggac cttgcttccg gcaacaaaga gtttccaaaa cactggatca aaacaacaac  1500
agcaactttg cttggactgg tgccaccaaa tatcacctga cggcagaaa ctcattggtg  1560
aatcctggtg tcgccatggc aactcacaag gacgacgagg accgcttttt cccatccagc  1620
ggagtcctga ttttggaaa aactggagca accaacaaga ctacattgga aaacgtgtta  1680
atgacaaatg aagaagaaat tcgtcctact aatcctgtgg ccacagaaga atacgggata  1740
gtcagcagca atttacaagc ggccaatact gcagcccaga cacaagttgt caacaaccag  1800
ggagccttac ctggcatggt ctggcagaac cgggacgtgt acctgcaggt cccatctgg   1860
gccaaaattc ctcacacaga cggcaacttt caccctgtctc cgctgatggg cggctttgga  1920
ctgaagcatc cgcctcctca gatcctgatc aaaaacactc tgttcctgc taatcccccg  1980
gaggtgttta cgcctgccaa gtttgcttct ttcatcacac agtacagcac cggccaggtc  2040
agcgtggaga tcgagtggga gctgcagaag gagaacagca agcgctggaa cccagagatt  2100
cagtatacct ccaattttga caaacagact ggtgtggact ttgccgttga cagccagggt  2160
gtttattctg agcctcgccc cattggtact cgttacctca cccgtaatct gtaa         2214
```

<210> 41
<211> 2214
<212> DNA
<213> new AAV serotype, clone rh.45

<400> 41

```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac   120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac   180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac   240
```

```
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt      300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa dacggctcct      420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca      540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga      600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac      660

ggagtgggta atgcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc      720

atcaccacca gcacccgaac ctgggctttg cccacctaca acaaccacct ctacaagcaa      780

atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcaccccc      840

tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg      900

ctcatcaaca caactgggg attccggccc aagaagctca acttcaagct gttcaacatc      960

caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccttaccagc     1020

acggttcagg tcttttcgga ctcggaatac cagctgcct acgtcctcgg ctccgcacac     1080

cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttcctcagta cggctacctg     1140

actctcaaca cggtagtca ggccgtggga cgttcctcct ctactgcct ggagtacttc     1200

ccctctcaga tgctgagaac gggcaacaac ttttccttca gctacacttt cgaggacgtg     1260

cctttccaca gcagctacgc gcacagccag agtttggaca ggctgatgaa tcctctcatc     1320

gaccagtacc tgtactacct gtcaagaacc cagtctacgg gaggcacagc gggaacccag     1380

cagttgctgt tttctcaggc cgggcctagc aacatgtcga ctcaggccag aaactggctg     1440

cctggaccct gctacagaca gcagcgcgtc tccacgacac tgtcgcaaaa caacaacagc     1500

aactttgcct ggactggtgc caccaagtat catctgaacg gcagagactc tctggtgaat     1560

ccgggcgtcg ccatggcaac caacaaggac gacgaggacc gcttcttccc atccagcggc     1620

atcctcatgt ttggcaagca gggagctgga aaagacaacg tggactatag caacgtgatg     1680

ctaaccagcg aggaagaaat caagaccacc aaccccgtgg ccacagaaca gtatggcgtg     1740

gtggctgata acctacagca gcaaaacacc gctcctattg tgggggccgt caacagccag     1800

ggagccttac ctggcatggt ctggcagaac cgggacgtgt acctgcaggg tcctatttgg     1860

gccaagattc ctcacacaga tggcaacttt caccccgtctc cttttaatggg cggctttgga     1920

cttaaacatc cgcctcctca gatccttatc aaaaacactc ctgttcctgc ggatcctcca     1980

acagcgttca accaggccaa gctgaattct ttcatcacgc agtacagcac cggacaagtc     2040

agcgtggaga tcgagtggga gctgcagaag gagaacagca gcgctggaa cccagagatt     2100

cagtatactt ccaactacta caatctaca aatgtggact ttgctgttaa tactgagggt     2160

gcttactctg agcctcgccc cattggcact cgttacctca cccgtaatct gtaa           2214
```

```
<210>   42
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone rh.59

<400>   42
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acctgaaacc tggagcccc aagcccaagg ccaaccagca gaagcaggac      120

gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac      180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt      300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa dacggctcct      420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgctagaaag agactgaact ttgggcagac tggcgactca      540
```

Page 37

```
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga        600

tctggtacaa tggctgcagg cggtggcgca ccaatggctg acaataacga gggcgccgac        660

ggagtgggta atgcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc        720

atcaccacca gcacccgaac ctgggctttg cccacctaca acaaccacct ctacaagcaa        780

atctccagtc agtcagcagg tagcaccaac gacaacgtct acttcggcta cagcacccccc      840

tgggggtatt ttgacttcaa cagattccac tgtcacttct caccacgtga ctggcagcgg        900

ctcatcaaca caactgggg attccggccc aagaagctca acttcaagct gttcaacatc        960

caggtcaagg aggtcacaac gaatgacggc gtcacgacca tcgccaataa ccctaccagc       1020

acggttcagg tcttttcgga ctcggaatac cagctgccct acgtcctcgg ctccgcacac       1080

cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttccccagta cggctacctg       1140

actctgaaca atggcagcca atcggtgggt cgttcctctt tctactgcct ggaatatttc       1200

ccttctcaaa tgctgagaac gggcaacaac ttcaccttca gctacacctt cgaggacgtt       1260

ccccttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcctcttatc      1320

gaccagtacc tgtattacct ggccagaaca cagagcaacg caggaggcac agctggcaat       1380

cgggaactgc agttttatca gggcgggcct accaccatgg ccgaacaagc caaaaactgg       1440

ctgcctggac cctgctacag acagcagcgc gtctccacga cactgtcgca aaacaacaac       1500

agcaactttg cctggactgg tgccaccaag tatcatctga acggcagaga ctctctggtg       1560

aatccgggcg tcgccatggc aaccaacaag gacgacgagg accgcttctt cccatccagc       1620

ggcatcctca tgtttggcaa gcagggagct ggaaaagaca acgtggacta tagcaacgtg       1680

atgctaacca gcgaggaaga aatcaagacc accaaccccg tggccacaga acagtatggc       1740

gtggtggctg ataacctaca gcagcaaaac accgctccta ttgtgggggc cgtcaacagc       1800

cagggagcct tacctggcat ggtctggcag aaccgggacg tgtacctgca gggtcctatt       1860

tgggccaaga ttcctcacac agatggcaac tttcacccgt ctcctttaat gggcggcttt       1920

ggacttaaac atccgcctcc tcagatcctc atcaaaaaca ctcctgttcc tgcggatcct       1980

ccaacagcgt tcaaccaggc caagctgaat tctttcatca cgcagtacag caccggacaa       2040

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaagcgctg gaacccagag       2100

attcagtata cttccaacta ctacaaatct acaaatgtgg actttgctgt taatactgag       2160

ggtgtttact ctgagcctcg ccccattggc actcgttacc tcacccgtaa tctgtaa          2217
```

```
<210>  43
<211>  2211
<212>  DNA
<213>  new AAV serotype, clone rh.43

<400>  43
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc         60

gagtggtggg acttgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac        120

gacggccggg gcctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac       180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac       240

cagcagctcg aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt         300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag        360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct        420

ggaaagaaga gaccagtaga gcagtcaccc caagaaccag actcctcctc gggcatcggc        480

aagaaaggcc aacagcccgc cagaaaaaga ctcaattttg ccagactgg cgactcagag         540

tcagttccag accctcaacc tctcggagaa cctccagcag cgccctctgg tgtgggacct        600

aatacaatgg ctgcaggcgg tggcgcacca atggcagaca taacgaagg cgccgacgga         660

gtgggtagtt cctcgggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc        720

accaccagca cccgaacctg ggccctgccc acctacaaca ccacctcta caagcaaatc         780

tccaacggga catcgggagg agccaccaac gacaacacct acttcggcta cagcacccccc      840
```

```
tggggggtatt ttgactttaa cagattccac tgccacttttt caccacgtga ctggcagcga      900
ctcatcaaca acaactgggg attccggccc aagagactca gcttcaagct cttcaacatc      960
caggtcaagg aggtcacgca gaatgaaggc accaagacca tcgccaataa cctcaccagc     1020
accatccagg tgtttacgga ctcggagtac cagctgccgt acgttctcgg ctctgcccac     1080
cagggctgcc tgcctccgtt cccggcggac gtgttcatga ttccccagta cggctaccta     1140
acactcaaca acggtagtca ggccgtggga cgctcctcct tctactgcct ggaatacttt     1200
ccttcgcaga tgctgagaac cggcaacaac ttccagttta cttacacctt cgaggacgtg     1260
cctttccaca gcagctacgc ccacagccag agcttggacc ggctgatgaa tcctctgatt     1320
gaccagtacc tgtactactt gtctcggact caaacaacag gaggcacggc aaatacgcag     1380
actctgggct tcagccaagg tgggcctaat acaatggcca atcaggcaaa gaactggctg     1440
ccaggaccct gttaccgcca acaacgcgtc tcaacgacaa ccgggcaaaa caacaatagc     1500
aactttgcct ggactgctgg gaccaaatac catctgaatg gaagaaattc attggctaat     1560
cctggcatcg ctatggcaac acacaaagac gacgaggagc gtttttttccc agtaacggga     1620
tcctgttttt ggcaacaaaa tgctgccaga gacaatgcgg attacagcga tgtcatgctc     1680
accagcgagg aagaaatcaa aaccactaac cctgtggcta cagaggaata cggtatcgtg     1740
gcagataact tgcagcagca aaacacggct cctcaaattg gaactgtcaa cagccagggg     1800
gccttacccg gtatggtctg gcagaaccgg acgtgtacc tgcagggtcc catctgggcc     1860
aagattcctc acacggacgg caacttccac ccgtctccgc tgatgggcgg ctttggcctg     1920
aaacatcctc cgcctcagat cctgatcaag aacacgcctg tacctgcgga tcctccgacc     1980
accttcaacc agtcaaagct gaactctttc atcacgcaat acagcaccgg acaggtcagc     2040
gtggaaattg aatgggagct acagaaggaa aacagcaagc gctggaaccc cgagatccag     2100
tacacctcca actactacaa atctacaagt gtggactttg ctgttaatac agaaggcgtg     2160
tactctgaac cccgccccat tggcacccgt tacctcaccc gtaatctgta a             2211
```

<210> 44
<211> 2211
<212> DNA
<213> new AAV serotype, clone hu.3

<400> 44

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac      180
aaggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac      240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcagagttt      300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgcgg cctggtttga ggaaacctgt taagacggct      420
ccgggaaaaa agaggccggt agagcactct cctgtggagc cagactcctc ctcgggaacc      480
ggaaaagcgg ccagcagcc tgcaagaaaa agattaaatt ttggtcagac tggagacgca      540
gactccgtac ctgaccccca gcctctcgga cagccaccag cagcccctc tggtctggga      600
tctactacaa tggctacagg cagtggcgca ccaatggcag acaataacga gggtgccgat      660
ggagtgggta attcctcagg aaattggcat gcgattccc aatggctgga cgacagagtc      720
atcgccacca gcacccgaac ctgggccctg cccacataca caaccacct ctacaagcaa      780
atctccagcc aatcaggagc ctgcaacgac aaccactact ttggctacag caccccctgg      840
gggtattttg acttcaacag attccactgc cactttttcac cacgtgactg gcaaagactc      900
atcaacagca ctggggatt ccggcccaaa gactcaact tcaagctctt taatattcaa      960
gtcaaagagg tcacgcagaa tgacggtacg acgacgattg ccaataacct taccagcacg     1020
gttcaggtgt ttactgactc ggagtaccag ctcccgtacg tcccgggctc ggcgcatcaa     1080
ggatgcctcc cgccgtttcc agcggacgtc ttcatggtcc acagtatgg atacctcacc     1140
```

```
ctgaacaacg ggagtcaggc ggtaggacgc tcttcctttt actgcctgga gtactttcct      1200
tctcagatgc tgcgtactgg aaacaacttt cagttcagct acacttttga agacgtgcct      1260
ttccacagca gctacgctca ctgccagagt ctggatcggc tgatgaatcc tctgatcgac      1320
cagtacctgt attatctgaa caagacacaa acaaatagtg gaactcttca gcagtctcgg      1380
ctactgttta gccaagctgg accaaccaac atgtctcttc aagctaaaaa ctggctgcct      1440
ggaccttgct acagacagca gcgtctgtca aaacaggcaa acgacaataa caactgcaac      1500
tttccctgga ctgcagctac aaagtatcat ctaaatggcc gggactcgtt ggttaatcca      1560
ggaccagcta tggccagtca caaggatgac gaagaaaagt ttttcccat gcatggaacc       1620
ctgatatttg gtaaacaagg aacaaatgcc aacgacgcgg atttggaaaa tgtcatgatt      1680
acagatgaag aagaaatcag gcccaccaat cccgtggcta cggagcagta cgggactgtg      1740
tcaaataatt tgcaaaactc aaacactggt ccaactacag gaactgtcaa tcaccaagga      1800
gcgttacctg gtatggtgtg gcaggatcga gacgtgtacc tgcagggacc catttgggcc      1860
aagattcctc acaccgatgg acactttcat ccttctccac tgatgggagg ttttggactc      1920
aaacacccgc ctcctcagat catgatcaaa agcactccg ttccagccaa tcctcccaca       1980
aacttcagtt ctgccaagtt tgcttcttcc atcacacagt attccacggg acaggtcagc      2040
gtggagatcg agtgggagct gcagaaggag aacagcaaac gctggaatcc cgaaattcag      2100
tacacttcca actacaacaa gtctgttaat gtggacttta ctgtggacac taatggtgtg      2160
tattcagagc ctcgccccat tggcaccaga tacctgactc gtaatctgta a               2211
```

```
<210>    45
<211>    2208
<212>    DNA
<213>    new AAV serotype, clone hu.5

<400>    45
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac      180
aaggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac       240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcagagttt      300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga      480
aaagcgggcc agcagcctgc aagaaaaaga ttaaattttg gtcagactgg agacgcagac      540
tccgtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggatct        600
actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg tgccgatgga      660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc      720
accaccagca cccgaacctg ggccctgccc acatacaaca accacctcta caagcaaatc      780
tccagccaat caggagccag caacgacaac cactactttg ctacagcac cccctggggg       840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca agactcatc       900
aacaacaact ggggattccg gcccaaaaga ctcaacttca gctctttaa tattcaagtc       960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt     1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tgggctcggc gcatcaagga     1080
tgcctcccgc cgtttccagc ggacgtcttc atggtccac agtatggata cctcaccctg      1140
aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct     1200
cagatgctgc gtactggaaa caactttcag ttcagctaca cttttgaaga cgtgcctttc     1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag     1320
tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca gtctcggcta     1380
ctgtttagcc aagctggacc aaccaacatg tctcttcaag ctaaaaactg gctgcctgga     1440
```

```
ccttgctaca gacagcagcg tctgtcaaaa caggcaaacg acaacaacaa cagcaacttt    1500

ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt taatccagga    1560

ccagctatgg ccagtcgcaa ggatgacgaa gaaaagtttt tccccatgca tggaaccctg    1620

atatttggta aacaaggaac aaatgccaac gacgcggatt tggaaaatgt catgattaca    1680

gatgaagaag aaatcagggc caccaatccc gtggctacgg agcagtacgg gactgtgtca    1740

aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatca ccaaggagcg    1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag    1860

attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tggactcaaa    1920

cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac    1980

ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggaca ggtcagcgtg    2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac    2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                2208
```

```
<210>   46
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.1

<400>   46
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac     120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac     180

aaggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac     240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcagagttt     300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag     360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg     420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga     480

aaagcgggcc agcagcctgc aagaaaaaga ttaaattttg tcagactgga gacgcagac     540

tccgtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggatct     600

actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga     660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc     720

accaccagca cccgaacctg ggccctgccc acatacaaca accacctcta caagcaaatc     780

tccagccaat caggagccag caacgacaac cactactttg ctacagcac cccctgggg     840

tattttgact caacagatt ccactgccac ttttcaccac gtgactggca aagactcatc     900

aacaacaact ggggattccg gcccaaaaga ctcaacttca gctctttaa tattcaagtc     960

aaagaggtca cgcagaatgg cggtacgacg acgattgcca ataaccttac cagcacggtt    1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tgggctcggc gcatcaagga    1080

tgcctcccgc cgtttccagc ggacgtcttc atggtccac agtatggata cctcaccctg    1140

aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct    1200

cagatgctgc gtactggaaa caactttcag ttcagctaca cttttgaaga cgtgcctttc    1260

cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag    1320

tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca gtctcggcta    1380

ctgtttagcc aagctggacc aaccaacatg tctcttcaag ctaaaaactg gctgcctgga    1440

ccttgctaca gacagcagcg tctgtcaaaa caggcaaacg gcaacaacaa cagcaacttt    1500

ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt taatccagga    1560

ccagctatgg ccagtcacaa ggatgacgaa gaaaagtttt tccccatgca tggaaccctg    1620

atatttggta aacaaggaac aaatgccaac gacgcggatt tggaaaatgt catgattaca    1680

gatgaagaag aaatcagggc caccaatccc gtggctacgg agcagtacgg gactgtgtca    1740
```

```
aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatca ccaaggagcg      1800
ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag      1860
attcctcaca ccgatggaca ctttcatcct tctccactga cgggaggttt tggactcaaa      1920
cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac      1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggaca ggtcagcgtg      2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac      2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggtgtgtat      2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

```
<210>   47
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.4
```

```
<400>   47
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg cataaggac       120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac      180
aagggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac      240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcagagttt       300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg agcctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga      480
aaagcgggcc agcagcctgc aagaaaaaga ttaaattttg gtcagactgg agacgcagac      540
tccgtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggatct        600
actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga       660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc      720
accaccagca cccgaacctg ggccctgccc acatacaaca ccaccctcta caagcaaatc      780
tccagccaat caggagccag caacgacaac cactactttg gctacagcac ccctgggggg      840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcgtc      900
aacaacaacc ggggattccg gcccaaaaga ctcaacttca gctctttaa tattcaagtc       960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt      1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tgggctcggc gcatcaagga     1080
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg     1140
aacaacggga gtcaggcggt aggacgctct cctttttact gcctggagta ctttccttct     1200
cagatgctgc gtactggaaa caactttcag ttcagctaca cttttgaaga cgtgcctttc      1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag     1320
tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca gtctcggcta     1380
ctgtttagcc aagctggacc aaccaacatg tctcttcaag ctaaaaactg gctgcctgga     1440
ccttgctaca gacagcagcg tctgtcaaaa caggcaaacg acaacaacaa cagcaacttt     1500
ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt taatccagga     1560
ccagctatgg ccagtcacaa ggatgacgaa gaaaagtttt tccccatgca tggaaccctg     1620
atatttggta acaaggaac aaatgccaac gacgcggatt tggaaaatgt catgattaca       1680
gatgaagaag aaatcagggc caccaatccc gtggctacg agcagtacg gactgtgtca        1740
aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatca ccaaggagcg     1800
ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag     1860
attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tggactcaaa     1920
cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac     1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggaca ggtcagcgtg     2040
```

Page 42

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa   2208

<210>   48
<211>   2209
<212>   DNA
<213>   new AAV serotype, clone hu.2

<400>   48
atggctgccg atggttatcc tccagattgg ctcgaggaca ctctctctga agggataaga   60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac   120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac   180

aaggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac   240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcagagttt   300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg   420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480

aaagcgggcc agcggcctgc aagaaaaaga ttaaattttg gtcagactgg agacgcagac   540

tccgtacctg acccccagcc tctcggacag ccaccagcag cccctctgg tctgggatct   600

actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga   660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc   720

accaccagca cccgaacctg ggccctgccc acatacaaca ccacctcta caagcaaatc   780

tccagccaat caggagccag caacgacaac cactactttg ctacagcac ccctggggg   840

tattttgact tcaacagatt ccactgccac tttttcaccac gtgactggca aagactcatc   900

aacaacaact ggggattccg gcccaaaaga ctcaacttca gctctttaa tattcaagtc   960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tgggctcggc gcatcaagga   1080

tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcggt aggacgctct ccttttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caactttcag ttcagctaca cttttgaaga cgtgcctttc   1260

cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320

tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca gtctcggcta   1380

ctgtttagcc aagctggacc aaccaacatg tctcttcaag ctaaaaactg ctgcctgga   1440

ccttgctaca gacagcagcg tctgtcaaaa caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagtcacaa ggatgacgaa gaaagttttt cccccatgca tggaaccctg   1620

atatttggta acaaggaac aaatgccaac gacgcggatt tggaaaatgt catgattaca   1680

gatgaagaag aaatcagggc caccaatccc gtggctacgg agcagtacgg gactgtgtca   1740

aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatcg ccaaggagcg   1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc aggacccat ttgggccaag   1860

attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tggactcaaa   1920

cacccgcctc ctcagatcat gatcaaaaac actcccgttc agccaatcc tcccacaaac   1980

ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggaca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaat   2209

<210>   49
<211>   2208

<211> DNA
<213>   new AAV serotype, clone hu.25

<400>   49
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga   60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac   120

ggcagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac   180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac   240

cggcagctca acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt   300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360

gcaaaaaaga gggttcttga acctctgggc ctggttgagg agcctgttaa aacggctccg   420

ggaaaaaaga gaccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga   480

aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac   540

tccgtacctg accctcagcc tctcggacag ccaccagcag ccccctctgg tctgggatct   600

actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga   660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc   720

accacaagca ctcgaacctg ggccctgccc acctacaaca ccacctcta caagcaaatc   780

tccagccaat caggagcctc aaacgacaac cactattttg ctacagcac cccttggggg   840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc   900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc   960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcggt aggacgctct ccctttttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caactttcag ttcagctaca cttttgaaga cgtgcctttc   1260

cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320

tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca gtctcggcta   1380

ctgtttagcc aagctggacc caccaacatg tctcttcaag ctaaaaactg gctgcctgga   1440

ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagtcacaa ggatgacgaa gaaaagtttt tccccatgca tggaaccctg   1620

atatttggta acaaggaac aaatgccaac gacgcggatt tggaaaatgt catgattaca   1680

gatgaagaag aaatcaggac caccaatccc gtggctacg agcagtacgg gactgtgtca   1740

aataatttgc aaaaactcaa cactggtcca actactggaa ctgtcaatca ccaaggagcg   1800

ttacctggta tggtgtggca ggatcgagat gtgtaccttc agggacccat ttgggccaag   1860

attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tggactcaaa   1920

cacccgcctc ctcagattat gatcaaaaac actcccgttc agccaatcc tcctacaaac   1980

ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacaataa tggcgtgtac   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa   2208

<210>   50
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.15

<400>   50
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga   60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac   120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactctac   180

aagggagagc cggtcgacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac   240

cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt   300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360

gccaaaaaga gggttcttga acctctgggc ttggttgggg agcctgttaa aacggctccg   420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480

aaagcgggca accagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac   540

tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctggg tctgggatct   600

actacaatgg ctacaggcag tggcgcacca gtggcagaca ataacgaggg tgccgatgga   660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc   720

accaccagca cccgaacctg ggctctgccc acctacaata accacctcta caagcaaatc   780

tccagccaat caggagcctc aaacgacaac cactactttg ctacagcac ccctggggg   840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgaccggca aagactcatc   900

aacaacaact ggggattccg accaaaaaga ctcaacttca agctctttaa cattcaagtc   960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcggg gtaccagctc ccgtacgtcc tcggcttggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcggt aggacgctct tcctttttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caactttcag ttcagctaca ccttttgaaga cgttcctttc   1260

cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320

tacctgtatt atctgaacaa gacacaatca aatagtggaa ctcttcagca gtctcggcta   1380

ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440

ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagccacaa agacgatgaa gaaagtttt ccccatgca tggaaccctg   1620

atatttggta aacaaggaac aaatgctaac gacgcggatt tggacaatgt catgattaca   1680

gatgaagaag aaatccgcac caccaatccc gtggctacga gcagtacgag atatgtgtca   1740

aataatttgc aaaactcaaa tactggtcca actactggaa ctgtcaatca ccaaggagcg   1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggaccat ttgggccaag   1860

attcctcaca ccgatggaca ctttcatcct tctccactta tgggaggttt tggactcaaa   1920

cacccacctc tcagatcat gattaaaaac actcccgttc cagccaatcc tcccacaaac   1980

ttcagttctg ccaagtttgc ttcttttcatc acacagtatt ccacgggaca agtcagcgtg   2040

gagatcgagt gggagctgca gaaggaggac agcaaacgct ggaaccccga gatccagtac   2100

acttccaact ataacaaacc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160

tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa   2208

<210> 51
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.16

<400> 51
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga   60

cagtggtgga agctcaaacc tggccccacca ccgccaaagc ccgcagagcg gcataaggac   120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactctac   180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac   240

cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccgg cgcggagttt   300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360

gccaaaaaga gggttcttga acctctgggc ttggttgagg agcctgttaa aacggctccg   420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480

```
aaagtgggca accagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggatct    600
actacaatgg ctacaggcag tggcgcacca gtggcagaca ataacgaggg tgccgatgga    660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720
accaccagca cccgaacctg ggctctgccc acctacaaca accacctcta caagcaaatc    780
tccagccaat caggagcctc aaacgacaac cactactttg gctacagcac cccctggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg accaaagaga ctcaacttca agctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcacccctg   1140
aacaacggga gtcaggcggt aggacgctct tcctttact gcctggagta ctttccttct   1200
cagatgctgc gtactggaaa caactttcag ttcagctaca cctttgaaga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320
tacctgtatt atctgaacaa gacacaatca aatagtggaa cccttcagca gtctcggcta   1380
ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440
ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500
ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560
ccagctatgg ccagccacaa agacgatgaa gaaaagtttt tccccatgca tggaacccctg   1620
atatttggta acaaggaac aaatgctaac gacgcggatt tggacaatgt catgattaca   1680
gatgaagaag aaatccgcac caccaatccc gtggctacgg agcagtacgg atatgtgtca   1740
aataatttgc aagactcaaa tactggtcca actactggaa ctgtcaatca ccaaggagcg   1800
ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860
attcctcaca ccgatggaca ctttcatcct tctccactta tgggaggttt tggactcaaa   1920
cacccacctc ctcagatcat gattaaaaac actcccgttc cagccaatcc tcccacaaac   1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggaca agtcagcgta   2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaacccgga gatccagtac   2100
acttccaact ataacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa             2208
```

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg cataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg aaagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg agcctgttaa aacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc gagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggatct    600
actacaatgg cttcaggcag tggcgcacca gtggcagaca ataacgaggg tgccgatgga    660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caagcaaatc    780
```

```
tccagccaat caggagcctc aaacgacaac cactactttg gctacagcac cccctggggg    840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900

aacaacagct ggggattccg acccaaaaga ctcaacttca agctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caagtgttta ccgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttt atggtcccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caactttcag ttcagctaca cctttgaaga cgttcccttc   1260

cacagcagct acgctcacag ccagagtctg gatcggctgc tgaatcctct gatcgaccag   1320

tacctatatt atctgaacaa gacacaatca aatagtggaa ctcttcagca gtctcggcta   1380

ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440

ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagccacaa agacgatgaa gaaagttttt tccccatgca tggaaccctg   1620

atatttggta acaaggaac aaatgctaac gacgcggatt ggacaatgt catgattaca   1680

gatgaagaag aaatccgcac caccaatccc gtggctacgg agcagtacgg atatgtgtca   1740

aataatttgc aaaactcaaa tactggtcca actactggaa ctgtcaatca ccaaggagcg   1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860

attcctcaca cggacgggca ctttcatcct tctccactaa tgggaggttt tgggctcaaa   1920

cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcctacaaac   1980

ttcagttctt ccaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtat   2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160

tcagagcctc gcccccattgg caccagatac ccgactcgta atctgtaa            2208
```

```
<210>   53
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.8

<400>   53
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaacaaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg cataaggac     120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aagggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300

caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420

ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480

aaagcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540

tccgtacctg acccccagcc tctcggacag ccaccagcag cccccctctgg tttgggatct    600

actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg tgccgatgga    660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720

accaccagca cccgaacctg gccctgccc acctacaaca accacctcta caagcaaatc    780

tcaagccaat caggagcctc aaacgacaac cactactttg gctacagcac ccttggggg     840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900

aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcgggtcggc gcatcaagga   1080
```

```
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct   1200
cagatgcttc gtactggaaa caactttcag ttcagctaca cctttgaaga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320
tacctgtatt atctgaacaa aacacaatca aatagtggaa ctcttcagca gtctcggcta   1380
ctgtttagtc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctacctgga   1440
ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500
ccctggactg cggctacaaa gtaccaccta aatggccggg actcgttggt taatccagga   1560
ccagctatgg ccagtcacaa agacgatgaa gaaaagtttt tccccatgca tggaaccctg   1620
atatttggta aacaaggaac aaatgctaac gacgcggatt tggacaatgt catgattaca   1680
gatgaagaag aaatccgcac caccaatccc gtggctacgg agcagtacgg atatgtgtca   1740
aataatttgc aaaactcaaa tactggtcca actactggaa ctgtcaatca ccaaggagcg   1800
ttacctggca tggtgtggca ggatcgagac gtgtacctgc agggacccat ttggggccaag   1860
attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tgggctcaaa   1920
cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac   1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaagagaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa              2208
```

<210>   54
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone rh.56

<400>   54
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aaggggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tttgggatct    600
actacaatgg ctacaggcag tggcgcacca atggcagaca taacgagggg tgccgatgga    660
gtgggtaatt cttcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720
accaccagca cccgaacctg ggcccagccc acctacaaca accacctcta caagcaaatc    780
tcaagccaat caggagcctc aaacgacaac cactactttg ctacagcac ccccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca agactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcgggtcggc gcatcaagga   1080
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct   1200
cagatgcttc gtactggaaa caactttcag ttcagctaca cctttgaaga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320
tacctgtatt atctgaacaa aacacaatca aatagtggag ctcttcagca gtctcggcta   1380
```

Page 48

```
ctgtttagtc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctacctgga   1440
ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500
ccctggactg cggctacaaa gtaccaccta aatggccggg actcgttggt taatccagga   1560
ccagctatgg ccagtcacaa agacgatgaa gaaaagtttt tccccatgca tggaaccctg   1620
atatttggta aacaaggaac aaatgctaac gacgcggatt tggacaatgt catgattaca   1680
gatgaagaag aaatccgcac caccaatccc gtggctacgg agcagtacgg atatgtgtca   1740
aataatttgc aaaactcaaa tactggtcca actactggaa ctgtcaatca ccgaggagcg   1800
ttacctggca tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860
attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tgggctcaaa   1920
cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac   1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaagagaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                2208
```

```
<210>  55
<211>  2208
<212>  DNA
<213>  new AAV serotype, clone hu.7
```

```
<400>  55
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg cataaggac     120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aaggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg acctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tttgggatct    600
actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg tgccgatgga    660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca ccacctcta caagcaaatc    780
tcaagccaat caggagcctc aaacgacaac cactactttg ctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcgggtcggc gcatcaagga   1080
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcggt aggacgctct tcctttact gcctggagta ctttcctct    1200
cagatgcttc gtactggaaa caactttcag ttcagctaca cctttgaaga cgttcctttc    1260
cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct gatcgaccag   1320
tacctgtatt atctgaacaa aacacaatca aatagtggaa ctcttcagca gtctcggcta   1380
ctgtttagtc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctacctgga   1440
ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa cagcaacttt   1500
ccctggactg cggctacaaa gtatcaccta aatggccggg actcgttggt taatccagga   1560
ccagctatgg ccagtcacaa agacgatgaa gaaaagtttt tccccatgca tggaaccctg   1620
atatttggta aacaaggaac aaatgctaac gacgcggatt tggacaatgt catgattaca   1680
```

```
gatgaagaag aaatccgcac caccaatccc gtggctacgg agcagtacgg atatgtgtca    1740

aataatttgc aaaactcaaa tactggtcca actactggaa ctgtcaatca ccaaggagcg    1800

ttacctggca tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag    1860

attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt tgggctcaaa    1920

cacccgcctc ctcagatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac    1980

ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg    2040

gagatcgagt gggagctgca gaaagagaac agcaaacgct ggaatcccga aattcagtac    2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggcgtgtat    2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa               2208
```

<210>   56
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.10

<400>   56
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc tcgcagagcg gcatcaggac    120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aaaggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300

caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480

aaggcgggcc atcagcctgc gagaaagaga ttgaattttg gtcagactgg agacgcagac    540

tccgtacctg acccccagcc tctcggacag ccaccagcag cccccacaag tctgggatct    600

actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga    660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720

accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caagcaaatc    780

tccagccaat caggagcctc gaacgacaac cactactttg ctacagcac ccctggggg    840

tattttgact tcaacagatt ccactgtcac ttctccccac gtgattggca aagactcatc    900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca taaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgtttccagc ggacgtcttc acggtcccac agtatggata cctcacctg   1140

aacaacggga gtcaggcggt aggacgctct tcctttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caaccttacc ttcagctaca cctttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtttg gaccggctga tgaatcctct gatcgaccag   1320

tatctatatt atctgaacag gacacaatca aatagtggaa ctcttcagca gtctaggcta   1380

ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440

ccttgctaca gacagcagcg tctttcaaag caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagccacaa agacgatgaa gaaaagtttt tccccatgca tggaaccctg   1620

atatttggta acaaggaac aaatgctaac gacgcggatt tggagcatgt tatgattaca   1680

gatgaagaag aaatcaggac caccaatcct gtggctacag agcagtacgg aaacgtgtca   1740

aataatttgc aaaactcaaa tactggtcca actacagaaa atgtcaatca ccaggggagcg   1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860

attcctcaca ccgacggaca ctttcaccct tctccactga tgggaggttt tggactcaaa   1920

cacccgcctc ctcaaatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac   1980
```

Page 50

```
tacagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggcca ggtcagcgtg    2040

gagattgagt gggagctgcg gaaggagaac agcaaacgct ggaaccccga gatccagtat    2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                 2208
```

<210> 57
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.11

<400> 57
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcatcaggac    120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aaaggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300

caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480

aaagcgggcc atcagcctgc gagaaagaga ttgaattttg gtcagactgg agacgcagac    540

tccgtacctg accccagcc tctcggacag ccaccagcag cccccacaag tttgggatct    600

actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga    660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720

accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caagcaaatc    780

tccagccaat caggagcctc gaacgacaac cactactttg ctacagcac ccctggggg    840

tattttgact tcaacagatt ccactgtcac ttctccccac gtgattggca aagactcatc    900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960

aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcacctg   1140

aacaacggga gtcaggcggt aggacgctct tcctttact gcctggagta ctttccttct   1200

cagatgctgc gtactggaaa caactttacc ttcagctaca cctttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtttg gaccggctga tgaatcctct gatcgaccag   1320

tatctatatt atctgaacag gacacaatca aatagtggaa ctcttcagca gtctaggcta   1380

ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440

ccttgctaca gacagcagcg tctttcaaag caggcaaacg acaacaacaa cagcaacttt   1500

ccctggactg cggctacaaa gtatcgtcta aatggccggg actcgttggt taatccagga   1560

ccagctatgg ccagccacaa agacgatgaa gaaagttttt tccccatgca tggaaccctg   1620

atatttggta acaaggaac aaatgctaac gacgcggatt tggagcatgt tatgattaca   1680

gatgaagaag aaatcaggac caccaatcct gtggctacag agcagtacg aaacgtgtca   1740

aataatttgc aaaactcaaa tactggtcca actacagaaa atgtcaatca ccagggagcg   1800

ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860

attcctcaca ccgacggaca ctttcaccct tctccactga tgggaggttt tggactcaaa   1920

cacccgcctc ctcaaatcat gatcaaaaac actcccgttc agccaatcc tcccacaaac   1980

ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggcca ggtcagcgtg   2040

gagattgagt gggagctgca gaaggagaac agcaaacgct ggaaccccga gatccagtat   2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                2208
```

<210> 58

<210> 2208
<212> DNA
<213> new AAV serotype, clone hu.9

<400> 58

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcatcaggac     120
aacagcaggg gtcttgtgct tcctgggtac aagtacctcg gaccctccaa cggactcgac     180
aaaggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac     240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt     300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag     360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg     420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga     480
aaagcgggcc atcagcctgc gagaaagaga ttgaattttg gtcagactgg agacgcagac     540
tccgtacctg accccccagcc tctcggacag ccaccagcag ccccccacaag tttgggatct     600
actacaatgg ctacaggcag tggcgcacca atggcagaca taacgaggg tgccgatgga     660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc     720
accaccagca cccgaacctg ggccctgccc acctacaaca ccacctcta caagcaaatc     780
tccagccaat caggagcctc gaacgacaac cactactttg ctgcagcac ccctgggg     840
tattttgact tcaacagatt ccactgtcac ttctccccac gtgattggca aagactcatc     900
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc     960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt    1020
caggtgttta ctgactcgga gtacccgctc ccgtacgtcc tcggctcggc gcatcaagga    1080
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcacccctg    1140
aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct    1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga cgttcctttc    1260
cacagcagct acgctcacag ccagagtttg gaccggctga tgaatcctct gatcgaccag    1320
tatctatatt atctgaacag gacacaatca aatagtggaa ctcttcagca gtctaggcta    1380
ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga    1440
ccttgctaca gacagcagcg tctttcaaag caggcaaacg acaacaacaa cagcaacttt    1500
ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga    1560
ccagctatgg ccagccacaa agacgatgaa gaaaagtttt tccccatgca tggaaccctg    1620
atatttggta acaaggaac aaatgctaac gacgcggatt tggagcatgt tatgattaca    1680
gatgaagaag aaatcaggac caccaatcct gtggctacag agcagtacgg aaacgtgtca    1740
aataatttgc aaaactcaaa tactggtcca actacagaaa atgtcaatca ccagggagcg    1800
ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag    1860
attcctcaca ccgacggaca cttttcaccct tctccactga tgggaggttt tggactcaaa    1920
cacccgcctc ctcaaatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac    1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggcca ggtcagcgtg    2040
gagattgagt ggggagctgca gaaggagaac agcaaacgct ggaaccccga gatccagtat    2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160
tcagagcctt gccccattgg caccagatac ctgactcgta atctgtaa               2208
```

<210> 59
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.12

<400> 59

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcatcaggac     120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac     180
```

```
aaaggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaagcgggcc atcagcctgc gagaaagaga ttgaattttg gtcagactgg agacgcagac    540
tccgtacctg accccagcc tctcggacag ccaccagcag cccccacaag tttgggatct    600
actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg tgccgatgga    660
gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caagcaaatc    780
tccagccaat caggagcctc gaacgacaac cactactttg ctacagcac ccctggggg    840
tattttgact tcaacagatt ccactgtcac ttctccccac gtgattggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcggt aggacgccct tcctttttact gcctggagta cttttccttct   1200
cagatgctgc gtactggaaa caactttacc ttcagctaca cctttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtttg gaccggctga tgaatcctct gatcgaccag   1320
tatctatatt atctgaacag gacacaatca aatagtggaa ctcttcagca gtctaggcta   1380
ctgtttagcc aagctggacc caccagcatg tctcttcaag ctaaaaactg gctgcctgga   1440
ccttgctaca gacagcagcg tctttcaaag caggcaaacg acaacaacaa cagcaacttt   1500
ccctggactg cggctacaaa gtatcatcta aatggccggg actcgttggt taatccagga   1560
ccagctatgg ccagccacaa agacgatgaa gaaaagtttt tcccccatgca tgggaccctg   1620
atatttggta aacaaggaac aaatgctaac gacgcggatt tggagcatgt tatgattaca   1680
gatgaagaag aaatcaggac caccaatcct gtggctacag agcagtacgg aaacgtgtca   1740
aataatttgc aaaaactcaaa tactggtcca actacagaaa atgtcaatca ccaggagcg   1800
ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat ttgggccaag   1860
attcctcaca ccgacggaca cttttcaccct tctccactga tgggaggttt tggactcaaa   1920
cacccgcctc ctcaaatcat gatcaaaaac actcccgttc cagccaatcc tcccacaaac   1980
ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacgggcca ggtcagcgtg   2040
gagattgagt gggagctgca gaaggagaac agcaaacgct ggaaccccga gatccagtat   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa               2208
```

<210>   60
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.23

<400>   60
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
```

```
aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg acccccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact    600
aatacgatgg cttcaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgcacctg ggccctgccc acctgcaaca accatctgta caagcaaatc    780
tccagccagt ctggagccag caacgacaac cactactttg gctacagcac cccctggggg    840
tattttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc    900
aacaacaact ggggattccg gcccaagaga ctcagcttca agtctcttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta ttttccttct   1200
cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc   1260
catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt   1380
cagtttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac   1500
tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc   1560
ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc   1620
atctttggaa aacaagactc gggaaaaaact aatgtggaca ttgaaaaggt tatgattaca   1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
acctacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagac gtgtacctgc gggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt tggacttaaa   1920
cacccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa               2208
```

```
<210>   61
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.26
<400>   61
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg acccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccaccgccga cgcggagttt    300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg acccccagcc tctcggacag ccaccagcag cccccтctgg tctgggaact    600
aatacgatgg cttcaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc    780
```

Page 54

```
tccagccagt ctggagccag caacgacaac cactactttg gctacagcac cccctggggg        840

tattttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc        900

aacaacaact ggggattccg gcccaagaga ctcagcttca agctctttaa cattcaagtc        960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt       1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga       1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg       1140

aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct       1200

cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc       1260

catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag       1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt       1380

cagtttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga        1440

ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac       1500

tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc       1560

ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc       1620

atctttggaa aacaagactc gggaaaaact aatgtggaca ttgaaaaggt tatgattaca       1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct       1740

accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt       1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag       1860

attccacaca cggacggaca ttttcacccc ctcccctca tgggcggatt cggacttaaa        1920

caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact       1980

ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg       2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac       2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat       2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                   2208
```

```
<210>   62
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.19

<400>   62
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga         60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac        120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac        180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac        240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt         300

caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag        360

gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg        420

ggagaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga        480

aaagcgggcc agcagcctgc aagaaagaga ttgaattttg ccagactgg agacgcagac         540

tcagtacctg accccccagcc tctcggacag ccaccagcag cccctctg tctgggaact         600

aatacgatgg cttcaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga        660

gtgggtaatt cctcgggaaa ttggtattgc gattccacat ggatgggcga cagagtcatc        720

accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc       780

tccagccagt ctggagccag caacgacaac cactactttg gctacagcac cccctggggg        840

tattttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc        900

aacaacaact ggggattccg gcccaagaga ctcagcttca agctctttaa cattcaagtc        960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt       1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga       1080
```

```
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg      1140

aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct      1200

cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc      1260

catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag      1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt      1380

cagttttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga      1440

ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac      1500

tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc      1560

ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc      1620

atctttggaa aacaagactc gggaaaaaact aatgtggaca ttgaaaaggt tatgattaca      1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct      1740

accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt      1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag      1860

attccacaca cggacggaca ttttcacccc tctcccctcg tgggcggatt cggacttaaa      1920

caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact      1980

ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg      2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac      2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat      2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa      2208
```

```
<210>  63
<211>  2208
<212>  DNA
<213>  new AAV serotype, clone hu.20

<400>  63
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120

gacagcaggg gtcttgtgct tcctgggtac aggtacctcg gacccttcaa cggactcgac      180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac      240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgtcga cgcggagttt      300

caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360

gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa ggcggctccg      420

ggagaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga      480

aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac      540

tcagtacctg accccccagcc tctcggacag ccaccagcag cccccctctgg tctgggaact      600

aatacgatgg cttcaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga      660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc      720

accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc      780

tccagccagt ctggagccag caacgacaac cactactttg ctacagcac ccctgggggg      840

catttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc      900

aacaacaact ggggattccg gcccaagaga ctcagcttca agctctttaa cattcaagtc      960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt      1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga      1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg      1140

aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct      1200

cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc      1260

catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag      1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt      1380
```

Page 56

```
cagtttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac   1500
tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc   1560
ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc   1620
atctttggaa aacaagactc gggaaaaact aatgtggaca ttgaaaaggt tatgattaca   1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccccca tgggcggatt cggacttaaa   1920
caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160
tcagagcctc gccccattgg cgccagatac ctgactcgta atctgtaa               2208
```

```
<210>   64
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.27

<400>   64
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt     300
caggagcgtc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggaact      600
aatacgatgg cttcaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga     660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc    780
tccagccagt ctggagccag caacgacaac cactactttg ctacagcac ccctggggg      840
tatttcgact tcaacagatt ccactgccac ttctccccac gtgactggca agactcatc     900
aacaacaact ggggattccg cgcccaagaga ctcagcttca gctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcggg gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgccttccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta cttttccttct   1200
cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc   1260
catagcagct acgctcacgg ccaaagtctg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt   1380
cagtttctc aggccggagc aagtgacgtt cgggaccagt ctagaaactg gcttcctgga    1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac   1500
tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc   1560
ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc   1620
gtctttggaa aacaagactc gggaaaaact aatgtggaca ttgaaaaggt tatgattaca   1680
```

Page 57

```
gacgaagagg aaatcaggac caccaatccc gcggctacgg agcagtatgg ttctgtatct      1740

accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt      1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag      1860

attccacaca cggacggaca tttttcacccc tctcccctca tgggcggatt cggacttaaa     1920

caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact      1980

ttcagtgcgg caaagtttgt ttccttcatc acacagtact ccacggggca ggtcagcgtg      2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac      2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat      2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                  2208
```

```
<210>   65
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.21

<400>   65
atggctgccg atggttatct tccagattgg ctcgaggaca ccctctctga aggaataaga        60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac       120

gacagcaggg tcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac        180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac       240

cggcagctcg acagcggaga taacccgtac ctcaagtaca ccacgccga cgcggagttt        300

caggagcgcc ttaaagagga tacgtctttt gggggcaacc tcggacgagc agtcttccag       360

gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg       420

ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga       480

aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac       540

tcagtacctg accccggcc tctcggacag ccaccagcag ccccctctgg tctgggaact        600

aatacgatgg cttcaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga       660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc       720

accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc       780

tccagccagt ctggagccag caacgacaac cactactttg ctacagcac ccctgggggg        840

tattttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc       900

aacaacaact ggggattccg gcccaagaga ctcagcttca agctctttaa cattcaagtc       960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt      1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga      1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcacccctg     1140

aacaacggca gtcaggcggt aggacgctct tcctttact gcctggagta ctttccttct       1200

cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc      1260

catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag      1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt      1380

cagttttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga      1440

ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac      1500

tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc      1560

ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc      1620

atctttggaa aacaagactc gggaaaaaact aatgtggaca ttgaaaaggt tatgattaca      1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct      1740

accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt      1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag      1860

attccacaca cggacggaca tttttcacccc tctcccctca tgggcggatt cggacttaaa     1920

caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact      1980
```

Page 58

```
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg    2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac    2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa               2208
```

```
<210>   66
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.24

<400>   66
atggctgccg atggttatct tccagattgg ctcgaggaca ccctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga taacccgtac ctcaagtaca accacgccga cgcggagttt    300
caggagcgcc ttaaagagga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480
aaagcgggcc agcagcctgc aagaaagaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg acccccggcc tctcggacag ccaccagcag cccctctgg tctgggaact     600
aatacgatgg cttcaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc    780
tccagccagt ctggagccag caacgacaac cactactttg ctacagcac cccctggggg     840
tattttgact tcaacagatt ccactgccac ttctcccac gtgactggca aagactcatc     900
aacaacaact ggggattccg gcccaagaga ctcagcttca agtctcttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt    1020
caggtgtttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg    1140
aacaacggca gtcaggcggt aggacgctct tcctttttact gcctggagta ctttccttct   1200
cagatgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc   1260
catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag    1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt    1380
cagtttttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac    1500
tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc    1560
ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt tccctcagag cggggttctc    1620
atctttggaa acaagactc gggaaaaact aatgtggaca ttgaaaaggt tatgattaca     1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct    1740
accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt    1800
cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag    1860
attccacaca cggacggaca ttttcaccc tctccctca tgggcggatt cggacttaaa     1920
caccctcctc cacaaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact    1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg    2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac    2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa               2208
```

<210> 67
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.22

<400> 67

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac     120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac     180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac     240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt      300

caggagcgcc ttaaaggaga tacgtctttt gggggcaacc tcggacgagc agtcttccag     360

gccaaaaaga ggattcttga acctctgggc ctggttgagg aacctgttaa gacggctccg     420

ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga     480

aaagcgggcc agcagcctgc aagaaagaga ttgaattttg tcagactgga gacgcagac     540

tcagtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggaact      600

aatacgatgg cttcaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga     660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcgg cagagtcatc     720

accaccagca cccgcacctg ggccctgccc acctacaaca accatctgta caagcaaatc     780

tccagccagt ctggagccag caacgacaac cactactttg ctacagcac ccctggggg      840

tattttgact tcaacagatt ccactgccac ttctccccac gtgactggca aagactcatc     900

aacaacaact ggggattccg gcccaagaga ctcagcttca gctctttaa cattcaagtc      960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt    1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga    1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg    1140

aacaacggca gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct    1200

cagacgcttc gtaccggaaa caactttacc ttcagctaca cctttgaaga cgttcctttc    1260

catagcagct acgctcacag ccaaagtctg gaccgtctca tgaatcctct catcgaccag    1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgat gtccaggctt    1380

cagttttctc aggccggagc aagtgacatt cgggaccagt ctagaaactg gcttcctgga    1440

ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgattac    1500

tcgtggactg gagctaccaa gtaccacctc aatggaagag actctctggt gaatccgggc    1560

ccagctatgg ccagccacaa ggacgatgaa gaaaaatatt ttcctcagag cggggttctc    1620

atctttggaa aacaagactc gggaaaaact aatgtggaca ttgaaaaggt tatgattaca    1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct    1740

accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt    1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag    1860

attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt cggacttaaa    1920

cacctcctc acacaattct catcaagaac accccggtac ctgcgaatcc ttcgaccact    1980

ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacggggca ggtcagcgtg    2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac    2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

<210> 68
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.28

<400> 68

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60

cagtggtgga aactcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac     120
```

```
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt    300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcaaaaaaga gggttctgga acctctgagc ctggttgagg agcctgttaa gacggctccg    420

ggaaaaaaga ggccggtaga gcactctccc gcagagccag attcctcctc cggaactgga    480

aagtcgggca accagcctgc aagaaagaga ttgaatttcg gtcagactgg agactcagac    540

tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggaact    600

aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720

accaccagca cccgaacctg ggccctgccc acctacaaca accatctgta caagcaaata    780

tccagccagt ctggagccag caacgacaat cactactttg ctacagcac cccctggggg    840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcagt aggacgctct tcattttact gcctagagta ctttccttct   1200

cagatgctgc gtaccggaaa caactttacc ttcagctaca ccttttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag   1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt   1380

cagtttttctc aggccggagc gagtgacatt caggaccagt ctaggaactg gcttcctgga   1440

ccctgttacc gtcagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500

tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560

ccggccatgg ccagccacaa agacgatgaa gaaaagtttt ttcctcagag cggggttctt   1620

atctttggga agcaaggctc agagaaaaca aatgtggata ttgaaaaggt catgattaca   1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740

accaacctcc agagcggcaa cacacaagca gctaccgcag atgtcaacac acaaggcgtt   1800

cttccaggca tggtctgggca agacagagac gtgtacctgc aggggcctac ttgggcaaag   1860

attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt tggacttaaa   1920

caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980

ttcagtgcgg caaagtttgc ttccttcatt acacagtact ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gatccagtac   2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

<210> 69
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.29

<400> 69
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcagagttt    300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcaaaaaaga gggttctgga acctctgggc ctggttgagg agcctgttaa gacggctccg    420
```

```
ggaaaaaaga ggccggtaga gcactctcct gcagagccag attcctcctc cggaactgga    480
aagtcgggca accagcctgc aagaaagaga ttgaatttcg gtcagactgg agactcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggaact     600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accatctgta caagcaaata    780
tccagccagt ctggagccag caacgacaat cactactttg ctacagcac ccctgggg       840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctagggta ctttccttct   1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt   1380
cagtttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gtcagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg ccagccacaa agacgatgaa gaaaagtttt ttcctcagag cggggttctt   1620
atctttggga agcaaggccc agagaaaaca aatgtggata ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagcggcaa cacacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca agacagagac gtgtacctgc aggggcctat ttgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt tggacttaaa   1920
caccctcctc cacagattct catcaagaac acccccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatt acacagtact ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gatccagtac   2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa                 2208
```

```
<210>    70
<211>    2208
<212>    DNA
<213>    new AAV serotype, clone hu.30

<400>    70
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga gcggagttt      300
caggagcgcc ttaaagagga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcaaaaaaga gggttctgga acctctgggc ctggttgagg agcctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gcagagccag attcctcctc cggaactgga    480
aagtcgggca accagcctgc aagaaagaga ttgaatttcg gtcagactgg agactcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggaact     600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
```

```
accaccagca cccgaacctg ggccctgccc acctacaaca accatctgta caagcaaata    780

tccagccagt ctggagccag caacgacaat cactactttg gctacagcac cccctggggg    840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900

aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcagt aggacgctct tcattttact gcctagagta ctttccttct   1200

cagatgctgc gtaccggaaa cagctttacc ttcagctaca cctttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag   1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt   1380

cagtttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440

ccctgttacc gtcagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500

tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560

ccggccatgg ccagccacaa agacgatgaa gaaaagttct ttcctcagag cggggttctt   1620

atctttggga agcaaggctc agagaaaaca aatgtggata ttgaaaaggt catgattaca   1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740

accaacctcc agagcggcaa cacacaagca gctaccgcag atgtcaacac acaaggcgtt   1800

cttccaggca tggtctggca agacagagac gtgtacctgc aggggcctat ttgggcaaag   1860

attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt tggacttaaa   1920

caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980

ttcagtgcgg caaagtttgc ttccttcatt acacagtact ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gatccagtac   2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa            2208
```

<210>   71
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.13

<400>   71

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt    300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360

gcaaaaaaga gggttcttga acctctgggc ctggttgagg agcctgttaa aacggctccg    420

ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga    480

aaagcgggcc agcagcctgc aagaaaaaga ttgaatttcg gtcagactgg agacgcagac    540

tccgtacctg accccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact    600

aatacgatgg cttcaggcag tggcgcacca atggcagaca taacgaggc gccgacgga    660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720

accaccagca cccgaacctg ggccctgccc acctacaaca accatctcta caagcaaatc    780

tccagccaat caggagccag caacgacaac cactactttg gctacagcac cccttggggg    840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900

aacaacaact ggggattccg gcccaagaga ctcaacttca gctctttaa cattcaagtc    960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
```

```
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140

aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct   1200

cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag   1320

tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt   1380

cagtttctc aggccggagc aagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440

ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500

tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560

ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc   1620

atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680

gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740

accaacctgc agggcggcaa cacacaagca gctaccgcag atgtcaacac acaaggcgtt   1800

cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag   1860

attccacaca cggacggaca tttttcacccc tctcccctca tgggcggatt cggacttaaa   1920

caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980

ttcagtgcgg caaagtttgc ttctttcatc acacagtatt ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gatccagtac   2100

acttccaact acaacaaatc tgttaatgtg gactttactt tgacactaa tggcgtgtat   2160

tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa   2208
```

<210> 72
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.34

<400> 72

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga   60

cagcggtgga agctcaaacc tggcccacca ccaccagagc ccgcagagcg gcataaggac   120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac   180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac   240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt   300

caggagcgcc ttaaagaaga tacgtccttt gggggcaacc tcggacgagc agtcttccag   360

gcgaaaaaga gggtacttga acctctgggc ctggttgagg aacctgttaa gacggctccg   420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480

aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac   540

tcagtacctg accccccagcc tctcggacag ccaccagcag cccctctgg tctgggaact   600

aatacgatgg ctacaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga   660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc   720

accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt   780

tccagccaat caggagcctc gaacgacaat cactactttg ctacagcac cccttggggg   840

tattttgact caacagatt ccactgccac ttttcaccac gtgactggca aagactcatc   900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc   960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020

caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140

aacaacgaga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct   1200

cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc   1260

cacagcagct acgctcacag ccagagtctg ggccgtctca tgaatcctct catcgaccag   1320
```

```
tacctgtatt acttgagcag aacaaacact ccaagtggaa ccaccacgca gtcaaggctt   1380
cagttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg caagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc   1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa   1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa            2208
```

```
<210>   73
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.35

<400>   73
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagcggtgga agctcaaacc tggcccacca ccaccagagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggtacttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg tcagactgg agacgcagac    540
tcagtacctg acccccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt    780
tccagccaat caggagcctc gaacgacaat cactactttg gctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataacttac agcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtaccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct   1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagtggaa ccaccacgca gtcaaggctt   1380
cagttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg caagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc   1620
```

```
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa   1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa             2208
```

```
<210>  74
<211>  2208
<212>  DNA
<213>  new AAV serotype, clone hu.36

<400>  74
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga    60
cagcggtgga agctcaaacc tggcccacca ccaccagagc ccgcagagcg gcataaggac   120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac   180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac   240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt   300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360
gcgaaaaaga gggtactcga acctctgggc ctggttgagg aacctgttaa gacggctccg   420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg tcagactgg agacgcagac   540
tcagtacctg accccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact   600
aatacgatgg ctacaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga   660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc   720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt   780
tccagccaat caggagcctc gaacgacaat cactactttg ctacagcac cccttggggg   840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc   900
aacaacaact ggggattccg acccaagaga ctcaacttca agtctcttaa cattcaagtc   960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt  1020
caggtgtta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga  1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg  1140
aacaacggga gtcaggcagc aggacgctct tcattttact gcctggagta cttttccttct  1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttccttcc  1260
cacagcagct acgctcacag ccagagtctg ggccgtctca tgaatcctct catcgaccag  1320
tacctgtatt acttgagcag aacaaacact ccaagtggaa ccaccacgca gtcaaggctt  1380
cagtttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga  1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac  1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc  1560
ccggccatgg caagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc  1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca  1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct  1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt  1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag  1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa  1920
```

```
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc    1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg    2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac    2100
acttccaact acaacaagtc cgttaatgtg gactttactg tggacactaa tggcgtgtat    2160
tcagagcctc gcccattgg caccagatac ctgactcgta atctgtaa                  2208
```

<210> 75
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.33

<400> 75

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagcggtgga agctcaaacc tggcccacca ccaccagagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aaggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggtacttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaggcgggcc agcagcctgc aagaaaaaga ttgaatttg gtcagactgg agacgcagac    540
tcagtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt    780
tccagccaat caggagcctc gaacgacaat cactactttg ctacagcac cccttgggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca taaccttac cggcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcacctg   1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct   1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca ttttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg ggccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagtggaa ccaccacgca gtcaaggctt   1380
cagtttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg caagccacaa ggacgatgaa gaaaagtttt tcctcagag cggggttctc   1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac aaccaatccc gtggctacga gcagtatgg ttctgtatct   1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa   1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaagtc cgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gcccattgg caccagatac ctgactcgta atctgtaa                 2208
```

```
<210>   76
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.45

<400>   76
atggctgccg atggctatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcatagggac     120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac     180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac     240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt      300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag     360

gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg     420

ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga     480

aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac     540

tcagtacctg accccccagcc tctcggacag ccaccagcag cccccctctgg tctgggaact    600

aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga     660

gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc     720

accaccagca cccgaacctg ggccctgccc acctacaaca ccacctcta caaacaaatt      780

tccagccaat caggagcctc gaacgacaat cactactttg ctacagcac cccttggggg      840

tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc     900

aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa cattcaagtc       960

aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt    1020

caggtgtttta ctgactcggg gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080

tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata ccccaccctg    1140

aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct    1200

cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc    1260

cacagcagct acgctcacag ccagagtctg gaccgtctca tgaatcctct catcgaccag    1320

tacctgtatt acttgagcac aacaaacact ccaagtggaa ccaccacgca gtcaaggctt    1380

cagtttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga    1440

ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500

tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc    1560

ccggccgtgg caagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc   1620

atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca    1680

gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct   1740

accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800

cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag    1860

attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa    1920

caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc    1980

ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac    2100

acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat    2160

tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa               2208

<210>   77
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.47

<400>   77
atggctgccg atggctatct tccagattgg ctcgaggaca ctctctctga aggaataaga      60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcatagggac     120
```

```
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgggg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg accccagcc tctcggacag ccaccagcag cccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt    780
tccagccaat caggagcctc gaacgacagt cactactttg ctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac tttcaccac gtgactggca aagactcatc    900
aacaacaact gggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct   1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcac aacaaacact ccaagtggaa ccaccacgca gtcaaggctc   1380
cagttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg caagccacaa ggacaatgaa gaaagtttt ttcctcagag cggggttctc   1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacttaaa   1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

<210> 78
<211> 2211
<212> DNA
<213> new AAV serotype, clone hu.48

<400> 78
```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acttgaaacc tggagccccg aagcccaaag ccaaccagca aaagcaggac    120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgcggagttt    300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420
```

```
ggaaagaaac gtccggtaga gcagtcgcca caagagccag actcctcctc gggcatcggc      480
aagacaggcc agcagcccgc taaaaagaga ctcaattttg gccagactgg cgactcagag      540
tcagtccccg atccacaacc tctcggagaa cctccagcaa cccccgctgc tgtgggacct      600
actacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaagg cgccgacgga      660
gtgggtaatg cctcaggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc      720
accaccagca cccgcacctg ggccttgccc acctacaata accacctcta caagcaaatc      780
tccagtactt caacgggggc cagcaacgac aaccactact tcggctacgg caccccctgg      840
gggtattttg atttcaacag attccactgc cacttttcac cacgtgactg gcagcgactc      900
atcaacaaca attgggggatt ccggcccaag agactcaact tcaaactctt caacatccaa      960
gtcgaggagg tcacgacgaa tgatggcgtc acaaccatcg ctaataacct taccagcacg     1020
gttcaagtct tctcggactc ggagtaccag cttccgtacg tcctcggctc tgcgcaccag     1080
ggctgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcaatacgg ctacctgacg     1140
ctcaacaatg gcagccaagc cgtgggacgt tcatcctttt actgcctgga atatttccct     1200
tctcagatgc tgagaacggg caacaacttt accttcagct acacctttga ggaagtgcct     1260
ttccacagca gctacgcgca cagccagagc ctggaccggc tgatgaatcc tctcatcgac     1320
caatacctgt attacctgaa cagaacacaa aatcagtccg gaagtgccca aaacaaggac     1380
ttgctgttta gccgtgggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct     1440
ggaccctgtt atcggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaat     1500
tttacctgga ctggtgcttc aaaatataac ctcaatgggc gtgaatccat catcaaccct     1560
ggcaccgctg tggcctcaca caaagacgac gaagacaagt ctttccccat gagcggtgtc     1620
atgatttttg gaaagagag cgccggagct tcaagcactg cattggacaa tgtcatgatt     1680
acagacgaag aggaaattaa agccactaac cctgtggcca ccgaaagatt tgggaccgtg     1740
gcagtcaatt ccagagcag cagcacagac cctgcgaccg gagatgtgca tgctatggga     1800
gcattacctg gcatggtgtg gcaagataga gacgtgtacc tgcagggtcc catttgggcc     1860
aaaattcctc acacagatgg acactttcac ccgtctcctc ttatgggcgg ctttggactc     1920
aagaacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggcg     1980
gagttttcag ctacaaagtt tgcttcattc atcacccaat actccacagg acaagtgagt     2040
gtggaaattg aatgggagct gcagaaagaa aacagcaagc gctggaatcc cgaagtgcag     2100
tacacatcca attatgcaaa atctgccaac gttgatttta ctgtggacaa caatggactt     2160
tatactgagc ctcgccccat tggcacccgt taccttaccc gtcccctgta a             2211
```

<210> 79
<211> 2211
<212> DNA
<213> new AAV serotype, clone rh.71

<400> 79
```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc      60
gagtggtggg acttgaaacc tggagccccg aagcccaaag ccaaccagca aaagcaggac     120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac     180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240
cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct     420
ggaaagaaac gtccggtaga gcagtcgcca caagagccag actcctcctc gggcatcggc      480
aagacaggcc agcagcccgc taaaaagaga ctcaattttg gtcagactgg cgactcagag      540
tcagtccccg atccacaacc tctcggagaa cctccagcaa cccccgctgc tgtgggacct      600
actacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaagg cgccgacgga      660
gtgggtaatg cctcaggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc      720
```
Page 70

```
accaccagca cccgcacctg ggccttgccc acctacaata accacctcta caagcaaatc     780
tccagtgctt caacgggggc cagcaacgac aaccactact tcggctacag caccccctgg     840
gggtattttg atttcaacag attccactgc cactttcac cacgtgactg gcagcgactc       900
atcaacaaca attgggggatt ccggcccaag agactcaact tcaaactctt caacatccaa    960
gtcaaggagg tcacgacgaa tgatggcgtc acaaccatcg ctaataacct taccagcacg     1020
gttcaagtct tctcggactc ggagtaccag cttccgtacg tcctcggctc tgcgcaccag     1080
ggctgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcaatacgc ctacctgacg     1140
ctcaacaatg gcagccaagc cgtgggacgt tcatccttt actgcctgga atatttccct      1200
tctcagatgc tgagaacggg caacaacttt accttcagct acacctttga ggaagtgcct     1260
ttccacagca gctacgcgca cagccagagc ctggaccggc tgatgaatcc tctcatcgac     1320
caatacctgt attacctgaa cagaactcaa aatcagtccg gaagtgccca aaacaaggac     1380
ttgctgttta gccgtgggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct     1440
ggaccctgtt atcggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaat     1500
tttacctgga ctggtgcttc aaaatataac ctcaatgggc gtgaatccat catcaaccct     1560
ggcactgcta tggcctcaca caaagacgac gaagacaagt tctttcccat gagcggtgtc     1620
atgattttg gaaaagagag cgccggagct tcaaacactg cattggacaa tgtcatgatt       1680
acagacgaag aggaaattaa agccactaac cctgtggcca ccgaaagatt tgggaccgtg     1740
gcagtcaatt ccagagcag cagcacagac cctgcgaccg gagatgtgca tgctatggga      1800
gcattacctg gcatggtgtg gcaagataga gacgtgtacc tgcagggtcc catttgggcc     1860
aaaattcctc acacagatgg acactttcac ccgtctcctc ttatgggcgg ctttggactc     1920
aagaacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggcg     1980
gagtttttcag ctacaaagtt tgcttcattc atcacccaat actccacagg acaagtgagt    2040
gtggaaattg aatgggagct gcagaaagaa aacagcaagc gctggaatcc cgaagtgcag     2100
tacacatcca attatgcaaa atctgccaac gttgatttta ctgtggacaa caatggactt     2160
tatactgagc ctcgccccat tggcacccgt taccttaccc gtccctgta a                2211
```

```
<210>    80
<211>    2214
<212>    DNA
<213>    new AAV serotype, clone hu.43

<400>    80
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac     120
gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac     180
aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac     240
cagcagctca aagcgggtga caatccgtac ccgcggtata accacgccga cgccgagttt     300
caggagcgtc tgcaagaaga tacgcctttt gggggcaacc tcgggcgagc agtcttccag     360
gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct     420
ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc     480
ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca     540
gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggcccctc tggtctggga     600
tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac     660
ggagtgggta atgcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc     720
atcaccacca gcacccgcac ctgggccttg cccacctaca taaccacct ctacaagcaa       780
atctccagtg cttcaacggg ggccagcaac gacaaccact acttcggcta cagcaccccc     840
tgggggtatt ttgatttcaa cagattccac tgccactttt caccacgtga ctggcagcga     900
ctcatcaaca acaattgggg gattccggcc caagagactc aacttcaaac tcttcaacatc    960
caagtcaagg aggtcacgac gaatgatggc gtcacaacca tcgctaataa ccttaccagc     1020
```

Page 71

```
acggttcaag tcttctcgga ctcggagtac cagcttccgt acgtcctcgg ctctgcgcac    1080
cagggctgcc tccctccgtt cccggcggac gtgttcatga ttccgcaata cggctacctg    1140
acgctcaaca atggcagcca agccgtggga cgttcatcct tttactgcct ggaatatttc    1200
ccttctcaga tgctgagaac gggcaacaac tttaccttca gctacacctt tgaggaagtg    1260
cctctccaca gcagctacgc gcacagccag agcctggacc ggctgatgaa tcctctcatc    1320
gtccaatacc tgtattacct gaacagaact caaaatcagt ccggaagtgc ccaaaacaag    1380
gacttgctgt tcagccgtgg gtctccagct ggcatgtctg ttcagcccaa aaactggcta    1440
cctggaccct gttatcggca gcagcgcgtt tctaaaacaa aaacagacaa caacaacagc    1500
aattttacct ggactggtgc ttcaaaatat aacctcaatg ggcgtgaatc catcatcaac    1560
cctggcactg ctatggcctc acacaaagac gacgaagaca agttctttcc catgagcggt    1620
gtcatgattt ttggaaaaga gagcgccgga gcttcaaaca ctgcattgga caatgtcatg    1680
attacagacg aagaggaaat taaagccact aaccctgtgg ccaccgaaag atttgggacc    1740
gtggcagtca atttccagag cagcagcaca gaccctgcga ccggagatgt gcatgctatg    1800
ggagcattac ctggcatggt gtggcaagat agagacgtgt acctgcaggg tcccatttgg    1860
gccaaaattc ctcacacaga tggacacttt cacccgtctc ctcttatggg cggctttgga    1920
ctcaagaacc cgcctcctca gatcctcatc aaaaacacgc ctgttcctgc gaatcctccg    1980
gcggagtttt cagctacaaa gtttgcttca ttcatcaccc aatactccac aggacaagtg    2040
agtgtggaaa ttgaatggga gctgcagaaa gaaaacagca gcgctggaa tcccgaagtg    2100
cagtacacat ccaattatgc aaaatctgcc agcgttgatt ttactgtgga caacaatgga    2160
ctttatactg agcctcgccc cattggcacc cgttacctta cccgtccct gtaa           2214
```

```
<210>    81
<211>    2211
<212>    DNA
<213>    new AAV serotype, clone hu.44

<400>    81
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcagacc tggccccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctga gacggctcct    420
ggaaagaaac gtccggtaga gcagtcgcca caagggccag actcctcctc gggcatcggc    480
aagacaggcc agcagcccgc taaaaagaga ctcaattttg gtcagactgg cgactcagag    540
tcagtccccg atccacaacc tctcggagaa cctccagcaa cccccgctgc tgtgggacct    600
actacaatgg cttcaggcgg tggcgcacca atggcagaca taacgaagg cgccgacgga    660
gtgggtaatg cctcaggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc    720
accaccagca cccgcacctg ggccttgccc acctacaata ccacctcta caagcaaatc    780
tccagtgctt caacgggggc cagcaacgac aaccactact cggctacag caccccctgg    840
gggtatttg atttcaacag attccactgc cacttttcac cacgtgactg cagcgactc    900
atcaacaaca attgggggatt ccggcccaag agactcaact tcaaactctt caacatccaa    960
gtcaaggagg tcacgacgaa tgatggcgtc acaaccatcg ctaataacct taccagcacg    1020
gttcaagtct ctcggactc ggagtaccag cttccgtacg tcctcggctc tgcgcaccag    1080
ggctgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcaatacgg ctacctgacg    1140
ctcaacaatg cagccaagc cgtgggacgt tcatcctttt actgcctgga atatttccct    1200
tctcagatgc tgagaacggg caacaacttt accttcagct acaccttga ggaagtgcct    1260
ttccacagca gctacgcgca gccagagc ctggaccggc tgatgaatcc tctcatcgac    1320
```

```
caataccctgt attacccgaa cagaactcaa aatcagtccg gaagtgccca aaacaaggac   1380

ttgctgtttta gccgtggggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct   1440

ggaccctgtt atcggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaat   1500

tttacctgga ctggtgcttc aaaatataac ctcaatgggc gtgaatccat catcaaccct   1560

ggcactgcta tggcctcaca caaagacgac gaagacaagt tctttcccat gagcggtgtc   1620

atgattttttg gaaaagagag cgccggagct tcaaacactg cattggacaa tgtcatgatt   1680

acagacgaag aggaaattaa agccactaac cctgtggcca ccgaaagatt tgggaccgtg   1740

gcagtcaatt tccagagcag cagcacagac cctgcgaccg gagatgtgca tgctatggga   1800

gcattacctg gcatggtgtg gcaaggtaga gacgtgtacc tgcagggtcc catttgggcc   1860

aaaattcctc acacagatgg acactttcac ccgtctcctc ttatgggcgg ctttggactc   1920

aagaacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggcg   1980

gagtttttcag ctacaaagtt tgcttcattc atcacccaat actccacagg acaagtgagt   2040

gtggaaattg aatgggagct gcagaaagaa aacagcaagc gctggaatcc cgaagtgcag   2100

tacacatcca attatgcaaa atctgccaac gttgattttta ctgtggacaa caatggactt   2160

tatactgagc ctcgccccat tggcacccgt taccttaccc gtcccctgta a          2211
```

```
<210>   82
<211>   2211
<212>   DNA
<213>   new AAV serotype, clone hu.46

<400>   82
atggctgccg acggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60

cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120

gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180

aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240

cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300

caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcgggcgggc agtcttccag    360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420

ggaaagaaac gtccggtaga gcagtcgcca caagagccag actcccctc gggcatcggc    480

aagacaggcc agcagcccgc taaaaagaga ctcaattttg gtcagactgg cgactcagag    540

tcagtccccg atccacaacc tctcggagaa cctccagcaa cccccgctgc tgtgggacct    600

actacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaagg cgccgacgga    660

gtgggtaatg cctcaggaaa ttggcactgc gattccacat ggctgggcga cagagtcatc    720

accaccagca cccgcacctg ggccttgccc acctacaata accacctcta caagcaaatc    780

tccagtgctt caacggggggc cagcaacgac aaccactact cggctacag cacccccctgg    840

gggtatttttg atttcaacag attccactgc cacttttcac cacgtgactg gcagcgactc    900

atcaacaaca attggggatt ccggcccaag agactcaact tcaaactctt caacatccaa    960

gtcaaggagg tcacgacgaa tgatggcgtc acaaccatcc ctaataacct taccagcacg   1020

gttcaagtct ctcggactc ggagtaccag cttccgtacg tcctcggctc tgcgcaccag   1080

ggccgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcaatacgg ctacctgacg   1140

ctcaacaatg gcagccaagc cgtgggacgt tcatcctctt actgcctgga atatttccct   1200

tctcagatgc tgagaacggg caacaacttt accttcagct acacctttga ggaagtgcct   1260

ctccacagca gctgcgcgca cagccagagc ctggaccggc tgatgaatcc tctcatcgac   1320

caataccctgt attacctgaa cagaactcaa aatcagtccg gaagtgccca aaacagggac   1380

ttgctgttca gccgtggggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct   1440

ggaccctgtt atcggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaat   1500

tttacctgga ctggtgcttc aaaatataac ctcaatgggc gtgaatccat catcaaccct   1560

ggcactgcta tggcctcaca caaagacgac gaagacaagt tctttcccat gagcggtgtc   1620
```

```
atgatttttg gaaaagagag cgccggagct tcaaacactg cattggacaa tgtcatgatt      1680

acagacgaag aggaaattaa agccactaac cctgtggcca ccgaaagatt tgggaccgtg      1740

gcagtcaatt ccagagcag cagcacagac cctgcgaccg gagatgtgca tgctatggga       1800

gcattacctg gcatggtgtg gcaagataga gacgtgtacc tgcagggtcc catttgggcc      1860

aaaattcctc acacagatgg acactttcac ccgtctcctc ttatgggcgg ctttggactc      1920

aagaacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggcg      1980

gagttttcag ctacaaagtt tgcttcattc atcacccaat actccgcagg acaagtgagt      2040

gtggaaattg aatgggagct gcagaaagaa aacagcaagc gctggaatcc cgaagtgcag      2100

tacacatcca attatgcaaa atctgccaac gttgattta ctgtggacaa caatggactt        2160

tatactgagc ctcgccccat tggcacccgt taccttaccc gtcccctgta a               2211
```

```
<210>    83
<211>    738
<212>    PRT
<213>    vp1, clone hu.17

<400>    83
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Cys Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255
```

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
              260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
          275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
              325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
          340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Pro Pro Pro Phe
          355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Arg Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
              405   410   415

Gln Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
          420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
          435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Asn Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
              485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
          500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
          515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
              565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Ala Ala
          580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
          595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
                        Page 75

```
        610                  615                  620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645             650             655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
            660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690             695             700

Ser Asn Tyr Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn
705             710             715             720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725             730             735

Asn Leu


<210>   84
<211>   738
<212>   PRT
<213>   vp1, clone hu.6

<400>   84

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160

Gly Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
            165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180             185             190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
```

                        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Ala Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Pro Trp Ala Leu Pro Thr Tyr Asn Asn His
              245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
              260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
           275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
     290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
              325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
           340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Pro Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
     370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Arg Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
              405   410   415

Gln Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
           420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
     450   455   460

Phe Ser Gln Ala Gly Pro Asn Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
              485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
           500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
     530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                 565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Ala Ala
             580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
             595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
             645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
             660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
             675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
             725   730   735

Asn Leu

<210>   85
<211>   738
<212>   PRT
<213>   vp1, clone hu.42

<400>   85

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
             20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
              165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
          180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
          195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
              245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
              260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
          275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
              325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
          340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
          355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
              405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
          420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
          435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
              485   490   495

Gln Ser Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
          500   505   510

Page 79

```
Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520             525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
        530             535             540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545             550             555             560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580             585             590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
        610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Leu
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645             650             655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
            660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705             710             715             720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725             730             735

Asn Leu


<210>    86
<211>    738
<212>    PRT
<213>    vp1, clone rh.38

<400>    86

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85              90              95
```

Page 80

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Arg Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
            165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Pro Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu His Tyr Leu
    435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
450   455   460

```
Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500             505             510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520             525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530             535             540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545             550             555             560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580             585             590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645             650             655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
        660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705             710             715             720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725             730             735

Asn Leu
```

```
<210>  87
<211>  738
<212>  PRT
<213>  vp1, clone hu.40

<400>  87
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45
```

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Ser Phe Gly Gln
            165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
        180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
        260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Ser Glu Phe Ser Tyr
                          Page 83

```
                    405                410                415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420                425                430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
            435                440                445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
        450                455                460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465                470                475                480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485                490                495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500                505                510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515                520                525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
        530                535                540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545                550                555                560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565                570                575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580                585                590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595                600                605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610                615                620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625                630                635                640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645                650                655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
                660                665                670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675                680                685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690                695                700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                710                715                720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725                730                735

Asn Leu
```

```
<210>   88
<211>   738
<212>   PRT
<213>   vp1, clone hu.37
```

<400> 88

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
        260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
    275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340   345   350

Page 85

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
        580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
        660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Page 86

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725   730   735

Asn Leu

<210> 89
<211> 738
<212> PRT
<213> vp1, clone rh.39

<400> 89

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Page 87

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
        580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
    595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
    660   665   670

Page 88

```
Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675                 680                 685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690                 695                 700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                 710                 715                 720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725                 730                 735

Asn Leu
```

```
<210>   90
<211>   738
<212>   PRT
<213>   vp1, clone AAV4407

<400>   90

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255
```

Page 89

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
            275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
            355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
            435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
                              Page 90

```
      ˙610˙˙˙                   615                     620
Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625                 630                 635                 640

Gly Leu Lys His Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645                 650                 655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
                660                 665                 670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
                675                 680                 685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
                690                 695                 700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                 710                 715                 720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725                 730                 735

Asn Leu
```

```
<210>   91
<211>   738
<212>   PRT
<213>   vp1, clone hu.41

<400>   91

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Pro Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130                 135                 140

Pro Val Glu Pro Pro Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
```

Page 91

                    195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
            275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Val Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
            355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
            435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
              565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
              580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
              595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
              645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
              660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
              675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
              725   730   735

Asn Leu

<210> 92
<211> 738
<212> PRT
<213> vp1, clone rh.40

<400> 92

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
              20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
              35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
              115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Page 93

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
              180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
          195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
              245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
          260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
    275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asp Glu Gly Thr Lys Thr Ile Ala
              325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
          340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
          355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
              405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
              420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
          435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Arg Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
              485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
          500   505   510

Page 94

```
Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520             525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
        530             535             540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545             550             555             560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Ala Asn Thr Gly
            580             585             590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645             650             655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
                660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Ser Glu
705             710             715             720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725             730             735

Asn Leu
```

```
<210>   93
<211>   731
<212>   PRT
<213>   vp1, clone pi.1

<400>   93
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1           5           10              15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85              90              95
```

```
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Pro Asp Ser Ser Ser Gly Ile Gly Lys Ser Gly Gln Gln
145             150             155             160

Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser
                165             170             175

Val Pro Asp Pro Gln Pro Leu Ser Glu Pro Pro Ala Gly Pro Ser Gly
            180             185             190

Leu Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala Asp
            195             200             205

Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Val Ser Gly Asn Trp His
    210             215             220

Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg
225             230             235             240

Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser
                245             250             255

Asn Gly Thr Ser Gly Gly Ser Ser Asn Asp Asn Thr Tyr Phe Gly Tyr
            260             265             270

Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe
            275             280             285

Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg
    290             295             300

Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val
305             310             315             320

Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala Asn Asn Leu Thr Ser Thr
                325             330             335

Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly
            340             345             350

Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met
    355             360             365

Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val
    370             375             380

Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu
385             390             395             400

Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu Asp Val Pro
            405             410             415

Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn
            420             425             430

Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Asn
            435             440             445

Gly Thr Asn Ala Thr Gln Thr Leu Leu Phe Ala Gln Ala Gly Pro Gln
450             455             460
```

Page 96

· · ·

```
Asn Met Ser Ala Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg
465             470             475             480

Gln Gln Arg Val Ser Thr Thr Val Ser Gln Asn Asn Asn Ser Asn Phe
                485             490             495

Thr Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asp Ser Leu
            500             505             510

Val Ser Pro Gly Val Ala Met Ala Thr His Lys Asp Glu Glu Arg
            515             520             525

Phe Phe Pro Ser Ser Gly Val Leu Met Phe Gly Lys Gln Gly Ala Gly
    530             535             540

Lys Asp Asn Val Glu Tyr Thr Asn Val Met Leu Thr Ser Glu Glu Glu
545             550             555             560

Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala
                565             570             575

Asp Asn Leu Gln Gln Thr Asn Ser Ala Pro Ile Val Gly Ala Val Asn
            580             585             590

Ser Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr
    595             600             605

Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe
    610             615             620

His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro
625             630             635             640

Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asp Pro Pro Val Asn
                645             650             655

Phe Thr Asp Ala Lys Leu Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly
            660             665             670

Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys
            675             680             685

Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Tyr Lys Ser Ala
    690             695             700

Asn Val Asp Phe Ala Val Asn Ala Asp Gly Val Tyr Ser Glu Pro Arg
705             710             715             720

Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725             730
```

```
<210>   94
<211>   731
<212>   PRT
<213>   vp1, clone pi.3

<400>   94
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Asp Ser Ser Ser Gly Ile Gly Lys Ser Gly Gln Gln
145   150   155   160

Pro Ala Lys Lys Arg Leu Asn Phe Gly Pro Thr Gly Asp Ser Glu Ser
            165   170   175

Val Pro Asp Pro Gln Pro Leu Ser Glu Pro Pro Ala Gly Pro Ser Gly
        180   185   190

Leu Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala Asp
        195   200   205

Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Val Ser Gly Asn Trp His
    210   215   220

Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg
225   230   235   240

Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser
            245   250   255

Asn Gly Thr Ser Gly Gly Ser Ser Asn Asp Asn Thr Tyr Phe Gly Tyr
            260   265   270

Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe
        275   280   285

Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg
    290   295   300

Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val
305   310   315   320

Thr Gln Asn Glu Gly Thr Lys Thr Thr Ala Asn Asn Leu Thr Ser Thr
            325   330   335

Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly
        340   345   350

Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met
    355   360   365

Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val
    370   375   380

Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu
385   390   395   400

Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu Asp Val Pro
            405   410   415

Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn

```
                    420                 425                 430

    Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Asn
                435                 440                 445

    Gly Thr Asn Ala Thr Gln Thr Leu Leu Phe Ala Gln Ala Gly Pro Gln
            450                 455                 460

    Asn Met Ser Ala Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg
    465                 470                 475                 480

    Gln Gln Arg Val Ser Thr Ala Val Ser Gln Asn Asn Asn Ser Asn Phe
                    485                 490                 495

    Thr Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asp Ser Leu
                500                 505                 510

    Val Asn Pro Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg
                515                 520                 525

    Phe Phe Pro Ser Ser Gly Val Leu Met Phe Gly Lys Gln Gly Ala Gly
            530                 535                 540

    Lys Asp Asn Val Glu Tyr Thr Asn Val Met Leu Thr Ser Glu Glu Glu
    545                 550                 555                 560

    Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala
                    565                 570                 575

    Asp Asn Leu Gln Gln Thr Asn Ser Ala Pro Ile Val Gly Ala Val Asn
                580                 585                 590

    Ser Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr
                595                 600                 605

    Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe
        610                 615                 620

    His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro
    625                 630                 635                 640

    Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asp Pro Pro Val Asn
                    645                 650                 655

    Phe Thr Asp Ala Lys Leu Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly
                660                 665                 670

    Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys
                675                 680                 685

    Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Tyr Lys Ser Ala
        690                 695                 700

    Asn Val Asp Phe Ala Val Asn Ala Asp Gly Val Tyr Ser Glu Pro Arg
    705                 710                 715                 720

    Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                    725                 730
```

<210>   95
<211>   731
<212>   PRT
<213>   vp1, clone pi.2

<400>   95

```
    Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
    1               5                   10                  15

    Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
```

```
                  20                    25                    30

        Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
                35                    40                    45

        Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
                50                    55                    60

        Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
        65                    70                    75                    80

        Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                        85                    90                    95

        Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                        100                   105                   110

        Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
                        115                   120                   125

        Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
                130                   135                   140

        Pro Val Glu Pro Asp Ser Ser Ser Gly Ile Gly Lys Ser Gly Arg Gln
        145                   150                   155                   160

        Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu Ser
                        165                   170                   175

        Val Pro Asp Pro Gln Pro Leu Ser Glu Pro Pro Ala Gly Pro Ser Gly
                        180                   185                   190

        Leu Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala Asp
                        195                   200                   205

        Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp His
                210                   215                   220

        Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr Arg
        225                   230                   235                   240

        Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile Ser
                        245                   250                   255

        Asn Gly Thr Ser Gly Gly Ser Ser Asn Asp Asn Thr Tyr Phe Gly Tyr
                        260                   265                   270

        Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe
                275                   280                   285

        Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg
                290                   295                   300

        Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val
        305                   310                   315                   320

        Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala Asn Asn Leu Thr Ser Thr
                        325                   330                   335

        Val Gln Val Phe Thr Asp Ser Lys Tyr Gln Leu Pro Tyr Val Leu Gly
                        340                   345                   350

        Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met
                355                   360                   365

        Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ala Val
        370                   375                   380
```

Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu
385   390   395   400

Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu Asp Val Pro
                405   410   415

Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn
            420   425   430

Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Gln Thr Asn
            435   440   445

Gly Thr Asn Ala Thr Gln Thr Leu Leu Phe Ala Gln Ala Gly Pro Gln
    450   455   460

Asn Met Ser Ala Gln Ala Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg
465   470   475   480

Gln Gln Arg Val Ser Thr Thr Val Ser Gln Asn Asn Asn Ser Asn Phe
            485   490   495

Thr Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asp Ser Leu
            500   505   510

Val Asn Pro Gly Val Ala Met Ala Thr His Lys Asp Asp Glu Glu Arg
        515   520   525

Phe Phe Pro Ser Ser Gly Val Leu Met Phe Gly Lys Gln Gly Ala Gly
    530   535   540

Lys Asp Asn Val Glu Tyr Thr Asn Val Met Leu Thr Ser Glu Glu Glu
545   550   555   560

Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly Val Val Ala
                565   570   575

Asp Asn Leu Gln Gln Thr Asn Ser Ala Pro Ile Val Gly Ala Val Asn
            580   585   590

Ser Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr
        595   600   605

Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe
    610   615   620

His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro
625   630   635   640

Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asp Pro Pro Val Asn
                645   650   655

Phe Thr Asp Ala Lys Leu Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly
            660   665   670

Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys
        675   680   685

Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Tyr Lys Ser Ala
    690   695   700

Asn Val Asp Phe Ala Val Asn Ala Asp Gly Val Tyr Ser Glu Pro Arg
705   710   715   720

Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730

<210>   96
<211>   738
<212>   PRT

<213> "Vp1, clone rh.52

<400> 96

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260                 265                 270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275                 280                 285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290                 295                 300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305                 310                 315                 320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325                 330                 335

Asn Ser Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340                 345                 350
```

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Pro Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Ser Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
    595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Page 103

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
              725   730   735

Asn Leu

<210> 97
<211> 738
<212> PRT
<213> vp1, clone rh.53

<400> 97

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
              20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
          35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
      50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
      130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
              165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
              180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
          195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
      210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
              245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
          260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
      275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
      290   295   300

Page 104

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
                340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
            355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
        370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Val His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Ser Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe

Page 105

```
          ···   660                  665                  670
Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675                  680                  685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690                  695                  700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                  710                  715                  720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Pro Thr Arg
                725                  730                  735

Asn Leu
```

<210> 98
<211> 738
<212> PRT
<213> vp1, clone rh.70

<400> 98

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1                5                  10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Ala Tyr Asn Asn His
```

```
                     245              250              255

      Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
                  260              265              270

      Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
                  275              280              285

      Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
                  290              295              300

      Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
      305              310              315              320

      Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                  325              330              335

      Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
                  340              345              350

      Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
                  355              360              365

      Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
                  370              375              380

      Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
      385              390              395              400

      Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                  405              410              415

      Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
                  420              425              430

      Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
                  435              440              445

      Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
      450              455              460

      Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
      465              470              475              480

      Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                  485              490              495

      Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                  500              505              510

      Leu Ser Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
                  515              520              525

      Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
                  530              535              540

      Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
      545              550              555              560

      Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                  565              570              575

      Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
                  580              585              590

      Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
                  595              600              605
```

Page 107

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
               645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Ser
               660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
               675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
               725   730   735

Asn Leu

<210>   99
<211>   738
<212>   PRT
<213>   vp1, clone rh.64

<400>   99

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
               20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
               35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
               50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
               85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
               100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
       115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
       130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
               165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
               180   185   190

Page 108

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
        260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

```
Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580             585             590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645             650             655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Val Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Arg Asn Pro Glu Ile Gln Tyr Thr
    690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705             710             715             720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725             730             735

Asn Leu


<210>  100
<211>  738
<212>  PRT
<213>  vp1, clone rh.68

<400>  100

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1           5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
        100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
130             135             140
```

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Page 111

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Pro Ser Gly Ile Leu Met
        530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
        610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
                660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Val Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Leu Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725   730   735

Asn Leu

<210>   101
<211>   738
<212>   PRT
<213>   vp1, clone rh.46

<400>   101

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
        210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
        290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
        370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
            435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu

Page 113

```
        450                    455                    460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465                 470                 475                 480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485                 490                 495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500                 505                 510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515                 520                 525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
        530                 535                 540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545                 550                 555                 560

Met Leu Thr Ser Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr
            565                 570                 575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580                 585                 590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595                 600                 605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610                 615                 620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625                 630                 635                 640

Gly Leu Lys His Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645                 650                 655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660                 665                 670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675                 680                 685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690                 695                 700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                 710                 715                 720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725                 730                 735

Asn Leu


<210>   102
<211>   738
<212>   PRT
<213>   vp1, clone hu.39

<400>   102

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
```

Page 114

```
                35                    40                    45


Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60


Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80


Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85              90              95


Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110


Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125


Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140


Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160


Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Arg
                165             170             175


Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180             185             190


Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195             200             205


Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210             215             220


Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225             230             235             240


Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245             250             255


Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
        260             265             270


Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Leu Asp Phe Asn
    275             280             285


Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
290             295             300


Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305             310             315             320


Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325             330             335


Asn Asn Leu Ala Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340             345             350


Pro Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355             360             365


Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370             375             380


Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385             390             395             400
```

```
                    405              ·        ·  410 ·            ̣⁵⁻ ·⁾·
                                                           415

    Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
                420              425              430

    Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
                435              440              445

    Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
                450              455              460

    Phe Ser Arg Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
    465              470              475              480

    Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                     485              490              495

    Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500              505              510

    Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
                515              520              525

    Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
         530              535              540

    Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
    545              550              555              560

    Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                     565              570              575

    Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Asn Thr Ala
                580              585              590

    Pro Thr Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
             595              600              605

    Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
         610              615              620

    Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
    625              630              635              640

    Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                     645              650              655

    Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
             660              665              670

    Ile Ala Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
             675              680              685

    Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
         690              695              700

    Ser Asn Tyr Tyr Lys Ser Thr Asn Ala Asp Phe Ala Val Asn Thr Glu
    705              710              715              720

    Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                     725              730              735

    Asn Leu
```

```
<210>   103
<211>   738
<212>   PRT
```

<213> VP1, clone rh.49

<400> 103

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro His Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Leu Ile Gly Glu Pro
                180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
                260                 265                 270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
            275                 280                 285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290                 295                 300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305                 310                 315                 320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325                 330                 335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340                 345                 350
```

```
Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355             360             365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Asn Leu Thr Leu Asn
    370             375             380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385             390             395             400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405             410             415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420             425             430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435             440             445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450             455             460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500             505             510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520             525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530             535             540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Met Gly Tyr Ser Asn Val
545             550             555             560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580             585             590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645             650             655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660             665             670

Ile Thr Gln Tyr Gly Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705             710             715             720
```

Page 118

```
Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
              725             730                 735

Asn Leu
```

```
<210>   104
<211>   738
<212>   PRT
<213>   vp1, clone rh.51

<400>   104
```

```
Met Val Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1                 5                 10                15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                25                30

Lys Ala Asn Gln Gln Lys Gln Gly Asp Gly Arg Gly Leu Val Leu Pro
        35                40                45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                55                60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                70                75                80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                90                95

Asp Ala Glu Leu Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100               105               110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115               120               125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130               135               140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145               150               155               160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
            165               170               175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180               185               190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195               200               205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210               215               220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225               230               235               240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245               250               255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260               265               270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275               280               285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290               295               300
```

Page 119

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Gln Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
        420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
        580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
    595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe

Page 120

```
            "660"                    665                    670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675                    680                    685

Pro Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690                    695                    700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                    710                    715                    720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725                    730                    735

Asn Leu
```

```
<210>   105
<211>   738
<212>   PRT
<213>   vp1, clone rh.57

<400>   105

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1                   5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Gln Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
        210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
```

245   250   255

Leu Tyr Lys Gln Thr Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
          260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
          275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
          340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
          355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
          420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
          435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
          500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
          515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
          580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
          595   600   605

Page 122

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Ala Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725   730   735

Asn Leu

<210> 106
<211> 738
<212> PRT
<213> vp1, clone rh.58

<400> 106

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
            165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
        260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Page 124

```
....
    Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                  565             570             575

    Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
                  580             585             590

    Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
                  595             600             605

    Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
        610             615             620

    Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
    625             630             635             640

    Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Ser Thr Pro Val
                  645             650             655

    Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
                  660             665             670

    Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
                  675             680             685

    Leu Gln Lys Glu Asn Ser Lys Cys Trp Asn Pro Glu Ile Gln Tyr Thr
        690             695             700

    Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
    705             710             715             720

    Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                  725             730             735

    Asn Leu


    <210>   107
    <211>   738
    <212>   PRT
    <213>   vp1, clone rh.61

    <400>   107

    Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
    1               5               10              15

    Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                  20              25              30

    Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
                  35              40              45

    Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50              55              60

    Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
    65              70              75              80

    Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                  85              90              95

    Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                  100             105             110

    Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
                  115             120             125

    Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130             135             140
```

```
Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             .           160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180             185             190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195             200             205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210             215             220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225             230             235             240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245             250             255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
            260             265             270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275             280             285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Pro Ile Asn
    290             295             300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305             310             315             320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325             330             335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340             345             350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355             360             365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370             375             380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385             390             395             400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405             410             415

Pro Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
        420             425             430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435             440             445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450             455             460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500             505             510
```

Page 126

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asp Thr Ala
            580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Val Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660   665   670

Ile·Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210>   108
<211>   738
<212>   PRT
<213>   vp1, clone rh.50

<400>   108

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45·

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Page 127

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Gly Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
        210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
            275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
        290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
        370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Val Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu

Page 128

```
        450                      455                    460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465                 470                 475                 480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485                 490                 495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500                 505                 510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515                 520                 525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530                 535                 540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545                 550                 555                 560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565                 570                 575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580                 585                 590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595                 600                 605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610                 615                 620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625                 630                 635                 640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645                 650                 655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
                660                 665                 670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
            675                 680                 685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Ser Pro Glu Ile Gln Tyr Thr
    690                 695                 700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705                 710                 715                 720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725                 730                 735

Asn Leu


<210>   109
<211>   737
<212>   PRT
<213>   vp1, clone rh.45

<400>   109

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
```

Page 129

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
            165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
        260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
    275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
    355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Page 130

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr Thr
405 410 415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
420 425 430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser
435 440 445

Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu Phe
450 455 460

Ser Gln Ala Gly Pro Ser Asn Met Ser Thr Gln Ala Arg Asn Trp Leu
465 470 475 480

Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser Gln
485 490 495

Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His Leu
500 505 510

Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr Asn
515 520 525

Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met Phe
530 535 540

Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val Met
545 550 555 560

Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr Glu
565 570 575

Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala Pro
580 585 590

Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val Trp
595 600 605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
610 615 620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625 630 635 640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
645 650 655

Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe Ile
660 665 670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
675 680 685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
690 695 700

Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu Gly
705 710 715 720

Ala Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
725 730 735

Leu

<210> 110
<211> 738
<212> PRT

<213> Vp1, clone Rh.59

<400> 110

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210                 215                 220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
            260                 265                 270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275                 280                 285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290                 295                 300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305                 310                 315                 320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
                325                 330                 335

Asn Pro Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340                 345                 350
```

```
Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
    355             360             365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
370             375             380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385             390             395             400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405             410             415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420             425             430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435             440             445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450             455             460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500             505             510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
    515             520             525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530             535             540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545             550             555             560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565             570             575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
        580             585             590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595             600             605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610             615             620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625             630             635             640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645             650             655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660             665             670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675             680             685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690             695             700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705             710             715             720
```

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                  725   730   735

Asn Leu

<210>   111
<211>   737
<212>   PRT
<213>   vp1, clone rh.44

<400>   111

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Ser Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Cys Asp
65   70   75   80

Gln Arg Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Gly
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
        260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
    275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Page 134

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
                325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
                340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
                355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
                405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
                420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
                435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
                515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
                565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
                580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
                595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
                645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile

```
           660                      665                     670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675                 680                 685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
        690                 695                 700

Asn Phe Asp Glu Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705                 710                 715                 720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
                725                 730                 735

Leu


<210>   112
<211>   737
<212>   PRT
<213>   vp1, clone rh.65

<400>   112

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
                195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
        210                 215                 220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
```

                      245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
              260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
        340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Arg Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
            565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
        580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
    595   600   605

```
Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610             615             620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625             630             635             640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645             650             655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
            660             665             670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675             680             685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690             695             700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705             710             715             720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
                725             730             735

Leu
```

```
<210>  113
<211>  737
<212>  PRT
<213>  vp1, clone rh.67

<400>  113

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Leu Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180             185             190
```

```
Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195             200             205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210             215             220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225             230             235             240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245             250             255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
        260             265             270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275             280             285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290             295             300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305             310             315             320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325             330             335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
        340             345             350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355             360             365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370             375             380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385             390             395             400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405             410             415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
        420             425             430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435             440             445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450             455             460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500             505             510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520             525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530             535             540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545             550             555             560
```

```
Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
              565             570             575


Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
              580             585             590


Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
              595             600             605


Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
      610             615             620


His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625             630             635             640


Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
              645             650             655


Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
              660             665             670


Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
      675             680             685


Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
      690             695             700


Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705             710             715             720


Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
              725             730             735


Leu


<210>    114
<211>    737
<212>    PRT
<213>    vp1, clone rh.62

<400>    114

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1             5              10             15


Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
             20             25             30


Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
             35             40             45


Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
      50             55             60


Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65             70             75             80


Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
             85             90             95


Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
             100            105            110


Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
      115            120            125


Leu Gly Leu Ala Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
      130            135            140
```

Page 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Lys Gly Ala Asp Gly Val Gly Asn
        210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
            260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
        290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Gly Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
            355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
        370   375   380

Asp Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500   505   510

Page 141

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
        530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
                565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
                580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
        595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
        610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
                645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
                660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
        690   695   700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705   710   715   720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
                725   730   735

Leu

<210>   115
<211>   737
<212>   PRT
<213>   vp1, clone rh.48

<400>   115

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Page 142

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Lys Gly Ala Asp Gly Val Gly Asn
    210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
        260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Ser
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
                          Page 143

```
            450                    455                    460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465                 470             475                 480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
                485             490                 495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500             505                 510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515             520                 525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530             535             540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545             550             555                 560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
            565             570             575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
        580             585             590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
    595             600             605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610             615             620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625             630             635             640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645             650             655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
        660             665             670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675             680             685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690             695             700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705             710             715             720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
            725             730             735

Leu


<210>   116
<211>   737
<212>   PRT
<213>   vp1, clone rh.54

<400>   116

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
```

Page 144

```
                   35                      40                      45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro
            180                 185                 190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210                 215                 220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245                 250                 255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
            260                 265                 270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275                 280                 285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290                 295                 300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305                 310                 315                 320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325                 330                 335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340                 345                 350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
            355                 360                 365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370                 375                 380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385                 390                 395                 400
```

Page 145

Pro Ser Gln Val Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
            435   440   445

Arg Thr Gln Ser Asn Pro Gly Gly Thr Ser Gly Asn Arg Glu Leu Gln
450   455   460

Phe Tyr Gln Gly Gly Pro Ser Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515   520   525

His Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
530   535   540

Phe Gly Lys Thr Gly Ala Thr Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
            565   570   575

Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
            580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
            595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
            660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
            675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
690   695   700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705   710   715   720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
            725   730   735

Leu

<210>   117
<211>   737
<212>   PRT

<213> vp1, clone rh.55

<400> 117

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Arg Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
            260                 265                 270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275                 280                 285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290                 295                 300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305                 310                 315                 320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
                325                 330                 335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340                 345                 350
```

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
                405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Arg Arg Val Ser Lys Thr Leu Asp
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
                565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
            580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
        595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
        660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
    675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690   695   700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705   710   715   720

Page 148

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
　　　　　　　　725　　　　　　　　730　　　　　　　　735

Leu

<210>　118
<211>　738
<212>　PRT
<213>　vp1, clone rh.47

<400>　118

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1　　　　　　　5　　　　　　　　10　　　　　　　　15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
　　　　　　20　　　　　　　25　　　　　　　30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
　　　　　35　　　　　　　40　　　　　　　45

Gly Tyr Lys His Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
　　50　　　　　　　55　　　　　　　60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65　　　　　　　70　　　　　　　75　　　　　　　80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
　　　　　　　85　　　　　　　90　　　　　　　95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
　　　　　　100　　　　　　　105　　　　　　　110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
　　　　　115　　　　　　　120　　　　　　　125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
　　130　　　　　　　135　　　　　　　140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145　　　　　　　150　　　　　　　155　　　　　　　160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
　　　　　　　165　　　　　　　170　　　　　　　175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
　　　　　　180　　　　　　　185　　　　　　　190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
　　　　　195　　　　　　　200　　　　　　　205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
　　210　　　　　　　215　　　　　　　220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225　　　　　　　230　　　　　　　235　　　　　　　240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
　　　　　　　245　　　　　　　250　　　　　　　255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
　　　　　　260　　　　　　　265　　　　　　　270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
　　　　　275　　　　　　　280　　　　　　　285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
　　290　　　　　　　295　　　　　　　300

Page 149

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ala Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu
    450   455   460

Gln Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn
465   470   475   480

Trp Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu
                485   490   495

Asp Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr
            500   505   510

His Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala
        515   520   525

Thr His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu
    530   535   540

Ile Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val
545   550   555   560

Leu Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr
                565   570   575

Glu Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala
            580   585   590

Ala Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe

Page 150

```
                660                        665                        670
```

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690   695   700

Ser Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725   730   735

Asn Leu


```
<210>  119
<211>  737
<212>  PRT
<213>  vp1, clone rh.69

<400>  119
```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
                195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
        210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His

                    245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
        260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
            355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Ile Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
    435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Gln Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
            565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
        580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
        595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
                645   650   655

Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe Ile
                660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690   695   700

Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu Gly
705   710   715   720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
                725   730   735

Leu

<210>   120
<211>   735
<212>   PRT
<213>   vp1, clone rh.60

<400>   120

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile His Glu Trp Trp Asp Pro Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
        180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr His Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
        260   265   270

Asn Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Arg Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
        420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Glu Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Page 154

```
Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
              565         570             575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
              580         585             590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
              595         600             605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610             615             620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625             630             635             640

Leu Lys His Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
              645             650             655

Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile Thr Gln
              660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
              675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Phe
    690             695             700

Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725             730             735
```

<210> 121
<211> 736
<212> PRT
<213> vp1, clone hu.31

<400> 121

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
              35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
              85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
              100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Leu Leu Glu Pro
              115             120             125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ala Gly Ile Gly
145             150             155             160
```

Page 155

Lys Ser Gly Ser Gln Pro Ala Lys Lys Lys Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Thr Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro Pro
                180   185   190

Ala Ala Pro Ser Gly Val Gly Ser Leu Thr Met Ala Ser Gly Gly Gly
            195   200   205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Asn Ser Thr Ser Gly Ser Ser Asn Asp Asn
            260   265   270

Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Asp Asn Asn Gly Val Lys Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp Ser Asp Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Glu Gly Cys Leu Pro Pro Phe Pro
            355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asp
    370   375   380

Gly Gly Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Glu
            405   410   415

Phe Glu Asn Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser
            435   440   445

Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln Gln Thr Leu Lys Phe Ser
    450   455   460

Val Ala Gly Pro Ser Asn Met Ala Val Gln Gly Arg Asn Tyr Ile Pro
465   470   475   480

Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser Thr Thr Val Thr Gln Asn
                485   490   495

Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala Ser Ser Trp Ala Leu Asn
            500   505   510

Gly Arg Asn Ser Leu Met Asn Pro Gly Pro Ala Met Ala Ser His Lys
            515   520   525

Page 156

```
Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser Gly Ser Leu Ile Phe Gly
    530             535             540

Lys Gln Gly Thr Gly Arg Asp Asn Val Asp Ala Asp Lys Val Met Ile
545             550             555             560

Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Ser
            565             570             575

Tyr Gly Gln Val Ala Thr Asn His Gln Ser Ala Gln Ala Gln Ala Gln
        580             585             590

Thr Gly Trp Val Gln Asn Gln Gly Ile Leu Pro Gly Met Val Trp Gln
        595             600             605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610             615             620

Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Met
625             630             635             640

Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
            645             650             655

Asp Pro Pro Thr Ala Phe Asn Lys Asp Lys Leu Asn Ser Phe Ile Thr
        660             665             670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
    675             680             685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
    690             695             700

Tyr Tyr Lys Ser Asn Asn Val Glu Phe Ala Val Ser Thr Glu Gly Val
705             710             715             720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>  122
<211>  736
<212>  PRT
<213>  vp1, clone hu.32

<400>  122
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro
        50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Leu Leu Glu Pro
    115             120             125
```

Page 157

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ala Gly Ile Gly
145   150   155   160

Lys Ser Gly Ser Gln Pro Ala Lys Lys Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Thr Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Val Gly Ser Leu Thr Met Ala Ser Gly Gly Gly
        195   200   205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Asn Ser Thr Ser Gly Gly Ser Ser Asn Asp Asn
            260   265   270

Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Asp Asn Asn Gly Val Lys Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp Ser Asp Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Glu Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asp
    370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Glu
            405   410   415

Phe Glu Asn Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser
        435   440   445

Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln Gln Thr Leu Lys Phe Ser
    450   455   460

Val Ala Gly Pro Ser Asn Met Ala Val Gln Gly Arg Asn Tyr Ile Pro
465   470   475   480

Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser Thr Thr Val Thr Gln Asn
                                Page 158

```
                      485                 490                 495

Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala Ser Ser Trp Ala Leu Asn
            500                 505                 510

Gly Arg Asn Ser Leu Met Asn Pro Gly Pro Ala Met Ala Ser His Lys
            515                 520                 525

Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser Gly Ser Leu Ile Phe Gly
        530                 535                 540

Lys Gln Gly Thr Gly Arg Asp Asn Val Asp Ala Asp Lys Val Met Ile
545                 550                 555                 560

Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Ser
                565                 570                 575

Tyr Gly Gln Val Ala Thr Asn His Gln Ser Ala Gln Ala Gln Ala Gln
            580                 585                 590

Thr Gly Trp Val Gln Asn Gln Gly Ile Leu Pro Gly Met Val Trp Gln
            595                 600                 605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
        610                 615                 620

Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Met
625                 630                 635                 640

Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645                 650                 655

Asp Pro Pro Thr Ala Phe Asn Lys Asp Lys Leu Asn Ser Phe Ile Thr
            660                 665                 670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675                 680                 685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
    690                 695                 700

Tyr Tyr Lys Ser Asn Asn Val Glu Phe Ala Val Asn Thr Glu Gly Val
705                 710                 715                 720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                 730                 735
```

```
<210>  123
<211>  736
<212>  PRT
<213>  capsid of hu.14\AAV9

<400>  123

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Gln Pro
            20                  25                  30

Lys Ala Asn Gln Gln His Gln Asp Asn Ala Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
```

                        85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Leu Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ala Gly Ile Gly
145   150   155   160

Lys Ser Gly Ala Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Thr Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Val Gly Ser Leu Thr Met Ala Ser Gly Gly Gly
            195   200   205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Asn Ser Thr Ser Gly Gly Ser Ser Asn Asp Asn
            260   265   270

Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Asp Asn Asn Gly Val Lys Thr Ile Ala Asn
                325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp Ser Asp Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Glu Gly Cys Leu Pro Pro Phe Pro
            355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asp
    370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Glu
                405   410   415

Phe Glu Asn Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser
            435   440   445

```
Lys Thr Ile Asn Gly Ser Gly Gln Asn Gln Gln Thr Leu Lys Phe Ser
    450             455             460
```

```
Val Ala Gly Pro Ser Asn Met Ala Val Gln Gly Arg Asn Tyr Ile Pro
465             470             475             480
```

```
Gly Pro Ser Tyr Arg Gln Gln Arg Val Ser Thr Thr Val Thr Gln Asn
                485             490             495
```

```
Asn Asn Ser Glu Phe Ala Trp Pro Gly Ala Ser Ser Trp Ala Leu Asn
            500             505             510
```

```
Gly Arg Asn Ser Leu Met Asn Pro Gly Pro Ala Met Ala Ser His Lys
        515             520             525
```

```
Glu Gly Glu Asp Arg Phe Phe Pro Leu Ser Gly Ser Leu Ile Phe Gly
    530             535             540
```

```
Lys Gln Gly Thr Gly Arg Asp Asn Val Asp Ala Asp Lys Val Met Ile
545             550             555             560
```

```
Thr Asn Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Ser
                565             570             575
```

```
Tyr Gly Gln Val Ala Thr Asn His Gln Ser Ala Gln Ala Gln Ala Gln
            580             585             590
```

```
Thr Gly Trp Val Gln Asn Gln Gly Ile Leu Pro Gly Met Val Trp Gln
            595             600             605
```

```
Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610             615             620
```

```
Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Met
625             630             635             640
```

```
Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645             650             655
```

```
Asp Pro Pro Thr Ala Phe Asn Lys Asp Lys Leu Asn Ser Phe Ile Thr
            660             665             670
```

```
Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675             680             685
```

```
Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
    690             695             700
```

```
Tyr Tyr Lys Ser Asn Asn Val Glu Phe Ala Val Asn Thr Glu Gly Val
705             710             715             720
```

```
Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725             730             735
```

```
<210>   124
<211>   735
<212>   PRT
<213>   vp1, clone hu.33

<400>   124
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15
```

```
Glu Gly Ile Arg Gln Arg Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
        20              25              30
```

```
Glu Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
    35              40              45
```

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
        260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Gly Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Page 162

```
Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Gly Arg
        420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485             490             495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
        500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515             520             525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580             585             590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   125
<211>   735
<212>   PRT
<213>   vp1, clone hu.34

<400>   125

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15
```

Glu Gly Ile Arg Gln Arg Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Glu Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
        100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Glu Ser
    370   375   380

Page 164

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Gly Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
        580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
        660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210> 126

<211> 735
<212> PRT
<213> vp1, clone hu.36

<400> 126

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Arg Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Glu Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr

```
                    340                  345                  350

        Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
                355                  360                  365

        Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
                370                  375                  380

        Gln Ala Ala Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
        385                  390                  395                  400

        Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                         405                  410                  415

        Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Gly Arg
                    420                  425                  430

        Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
                    435                  440                  445

        Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
            450                  455                  460

        Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
        465                  470                  475                  480

        Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                         485                  490                  495

        Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
                    500                  505                  510

        Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
                    515                  520                  525

        Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
            530                  535                  540

        Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
        545                  550                  555                  560

        Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                         565                  570                  575

        Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
                    580                  585                  590

        Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595                  600                  605

        Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
            610                  615                  620

        Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
        625                  630                  635                  640

        His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                         645                  650                  655

        Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
                    660                  665                  670

        Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
                    675                  680                  685

        Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
            690                  695                  700
```

```
Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 127
<211> 735
<212> PRT
<213> vp1, clone hu.45

<400> 127

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Arg Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
        260             265             270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275             280             285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290             295             300
```

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Gly Tyr Gln Leu Pro Tyr
                340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Pro Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Thr Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Val Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
        660   665   670

Page 169

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730   735

<210>   128
<211>   735
<212>   PRT
<213>   vp1, clone hu.47

<400>   128

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Arg Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
        100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115   120   125

Leu Gly Leu Val Gly Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Ser His Tyr
    260   265   270

Page 170

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Thr Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
        485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asn Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

```
His Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   129
<211>   735
<212>   PRT
<213>   vp1, clone hu.13

<400>   129
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Gly Thr Gly
145             150             155             160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
            195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225             230             235             240
```

Page 172

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Gly Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp

Page 173

```
                595                   600                   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610                 615                 620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625                 630                 635                 640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645                 650                 655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660                 665                 670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675                 680                 685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                 695                 700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                 710                 715                 720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725                 730                 735


<210>   130
<211>   735
<212>   PRT
<213>   vp1, clone hu.28

<400>   130

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Ser Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160

Lys Ser Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175

Gly Asp Ser Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180                 185                 190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
```

Page 174

```
              195                200                205

      Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
          210             215             220

      Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
      225             230             235             240

      Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                  245             250             255

      Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                  260             265             270

      Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
                  275             280             285

      Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
          290             295             300

      Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
      305             310             315             320

      Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                  325             330             335

      Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                  340             345             350

      Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
          355             360             365

      Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
          370             375             380

      Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
      385             390             395             400

      Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                  405             410             415

      Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                  420             425             430

      Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
                  435             440             445

      Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
          450             455             460

      Ala Gly Ala Ser Asp Ile Gln Asp Gln Ser Arg Asn Trp Leu Pro Gly
      465             470             475             480

      Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                  485             490             495

      Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
                  500             505             510

      Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
                  515             520             525

      Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
          530             535             540

      Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
      545   .             550             555             560
```

```
Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
              565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
              580             585             590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Gly Gln Asp
              595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Thr Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
              645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
              660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
              675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725             730             735
```

```
<210>  131
<211>  735
<212>  PRT
<213>  vp1, clone hu.30

<400>  131

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
              35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
              85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
              100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
              115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
              130             135             140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160
```

Gly Asp Ser Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Ser Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
        450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

```
Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540
```

```
Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560
```

```
Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565             570             575
```

```
Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
                580             585             590
```

```
Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
                595             600             605
```

```
Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620
```

```
Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640
```

```
His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645             650             655
```

```
Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660             665             670
```

```
Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675             680             685
```

```
Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700
```

```
Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720
```

```
Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725             730             735
```

```
<210>  132
<211>  735
<212>  PRT
<213>  vp1, clone hu.29

<400>  132
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15
```

```
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30
```

```
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45
```

```
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

```
Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80
```

```
Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85              90              95
```

```
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110
```

```
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115             120             125
```

```
Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160

Lys Ser Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165             170             175

Gly Asp Ser Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260             265             270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275             280             285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290             295             300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305             310             315             320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325             330             335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
        340             345             350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355             360             365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370             375             380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Gly Tyr Phe Pro Ser
385             390             395             400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405             410             415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485             490             495
```

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
            530   535   540

Gln Gly Pro Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
            610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
            690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

```
<210>    133
<211>    735
<212>    PRT
<213>    vp1, clone hu.19

<400>    133
```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
            50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Glu Lys Arg
            130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                    165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                    180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
                    195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp Tyr Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                    245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                    260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                    325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                    405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln

```
            450                    455                        460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465                 470                 475                 480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
                    485                 490                 495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
                500                 505                 510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515                 520                 525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
        530                 535                 540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545                 550                 555                 560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565                 570                 575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
                580                 585                 590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595                 600                 605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
        610                 615                 620

Asp Gly His Phe His Pro Ser Pro Leu Val Gly Gly Phe Gly Leu Lys
625                 630                 635                 640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645                 650                 655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660                 665                 670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675                 680                 685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                 695                 700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                 710                 715                 720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                 730                 735
```

```
<210>    134
<211>    735
<212>    PRT
<213>    vp1, clone hu.20

<400>    134

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35                  40                  45

Gly Tyr Arg Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
```

50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Val
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Ala Ala Pro Gly Glu Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly His Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
    355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Page 183

```
Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
        420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485             490             495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515             520             525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580             585             590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610             615             620

Asp Gly His Phe His Pro Ser Pro Pro Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
        660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Ala Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 135
<211> 735
<212> PRT
<213> vp1, clone hu.21

<400> 135

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15
```

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Arg Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485   490   495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210> 136
<211> 735

<212>   PRT
<213>   vp1, clone hu.24

<400>   136

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Arg Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
                485   490   495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
                500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
        580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
        660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
                        Page 188

```
      705              710              715              720

ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                 725              730              735


<210>   137
<211>   735
<212>   PRT
<213>   vp1, clone hu.23-2

<400>   137

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15


Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro
                20              25              30


Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
         35                  40                  45


Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
         50                  55                  60


Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80


Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                  90                  95


Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
             100                 105                 110


Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
         115                 120                 125


Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
         130                 135                 140


Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160


Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175


Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
             180                 185                 190


Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
         195                 200                 205


Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
         210                 215                 220


Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225                 230                 235                 240


Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Cys Asn Asn His Leu
                245                 250                 255


Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260                 265                 270


Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
         275                 280                 285


Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
         290                 295                 300


Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
```

Page 189

```
      305                 310                 315                 320

      Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                      325             330             335

      Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                      340             345             350

      Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
                  355             360             365

      Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
          370             375             380

      Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
      385             390             395             400

      Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                  405             410             415

      Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                  420             425             430

      Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
                  435             440             445

      Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
          450             455             460

      Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
      465             470             475             480

      Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
                  485             490             495

      Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
                  500             505             510

      Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
                  515             520             525

      Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
          530             535             540

      Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
      545             550             555             560

      Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                  565             570             575

      Gly Ser Val Ser Thr Tyr Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
                  580             585             590

      Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
                  595             600             605

      Arg Asp Val Tyr Leu Arg Gly Pro Ile Trp Ala Lys Ile Pro His Thr
          610             615             620

      Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
      625             630             635             640

      His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                  645             650             655

      Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
                  660             665             670
```

Page 190

```
Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 138
<211> 735
<212> PRT
<213> vp1, clone hu.22

<400> 138

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Gly Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
            115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
            195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Gly Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260             265             270
```

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Thr Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485   490   495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210> 139
<211> 735
<212> PRT
<213> vp1, clone hu.26

<400> 139

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Page 193

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
            290   295   300

Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
            450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485   490   495

Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
            530   535   540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Page 194

```
Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625         630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   140
<211>   735
<212>   PRT
<213>   vp1, clone hu.27

<400>   140
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Ser Gly Ser Gly
        195             200             205
```

```
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210              215              220
```

```
Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225              230              235              240
```

```
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245              250              255
```

```
Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
        260              265              270
```

```
Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275              280              285
```

```
Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290              295              300
```

```
Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305              310              315              320
```

```
Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325              330              335
```

```
Thr Ser Thr Val Gln Val Phe Thr Asp Ser Gly Tyr Gln Leu Pro Tyr
            340              345              350
```

```
Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355              360              365
```

```
Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370              375              380
```

```
Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385              390              395              400
```

```
Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405              410              415
```

```
Asp Val Pro Phe His Ser Ser Tyr Ala His Gly Gln Ser Leu Asp Arg
            420              425              430
```

```
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435              440              445
```

```
Asn Thr Pro Ser Gly Thr Thr Thr Met Ser Arg Leu Gln Phe Ser Gln
    450              455              460
```

```
Ala Gly Ala Ser Asp Val Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465              470              475              480
```

```
Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485              490              495
```

```
Asn Ser Asp Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500              505              510
```

```
Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515              520              525
```

```
Asp Glu Glu Lys Tyr Phe Pro Gln Ser Gly Val Leu Val Phe Gly Lys
    530              535              540
```

```
Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545              550              555              560
```

```
Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Ala Ala Thr Glu Gln Tyr
```

                    565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
          580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
          595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
          610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
              645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Val Ser Phe Ile Thr Gln
          660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
          675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725   730   735

<210>   141
<211>   735
<212>   PRT
<213>   vp1, clone hu.4

<400>   141

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
          35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
          100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr

                        165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
        210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Val Asn Asn Asn Arg
        290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
        435   440   445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450   455   460

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

```
Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530             535             540
```

```
Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545             550             555             560
```

```
Asp Glu Glu Glu Ile Arg Ala Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565             570             575
```

```
Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580             585             590
```

```
Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595             600             605
```

```
Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620
```

```
Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640
```

```
His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645             650             655
```

```
Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670
```

```
Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675             680             685
```

```
Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700
```

```
Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720
```

```
Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   142
<211>   735
<212>   PRT
<213>   vp1, clone hu.5
```

```
<400>   142
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15
```

```
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30
```

```
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45
```

```
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

```
Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80
```

```
Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95
```

```
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110
```

```
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115             120             125
```

```
Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140
Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160
Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165             170             175
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190
Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195             200             205
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210             215             220
Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225             230             235             240
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255
Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260             265             270
Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275             280             285
Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290             295             300
Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305             310             315             320
Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325             330             335
Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340             345             350
Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355             360             365
Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370             375             380
Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385             390             395             400
Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405             410             415
Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420             425             430
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Asn Lys Thr
        435             440             445
Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450             455             460
Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465             470             475             480
Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485             490             495
```

```
Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser Arg Lys Asp
            515             520             525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
            530             535             540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Ala Thr Asn Pro Val Ala Thr Glu Gln Tyr
                465             570             575

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580             585             590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
            610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645             650             655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   143
<211>   735
<212>   PRT
<213>   vp1, clone hu.2

<400>   143
```

```
Met Ala Ala Asp Gly Tyr Pro Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
            50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85              90              95
```

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Arg Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
        210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
        435   440   445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450   455   460

Page 202

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
                485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Ala Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn Arg Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210>   144
<211>   735
<212>   PRT
<213>   vp1, clone hu.1

<400>   144

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Gly Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                        Page 204

```
            420                    425                    430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Asn Lys Thr
        435                    440                    445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
        450                    455                    460

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465                    470                    475                    480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Gly Asn Asn
                485                    490                    495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
                500                    505                    510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515                    520                    525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
        530                    535                    540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545                    550                    555                    560

Asp Glu Glu Glu Ile Arg Ala Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565                    570                    575

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580                    585                    590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595                    600                    605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610                    615                    620

Asp Gly His Phe His Pro Ser Pro Leu Thr Gly Gly Phe Gly Leu Lys
625                    630                    635                    640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645                    650                    655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660                    665                    670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675                    680                    685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                    695                    700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                    710                    715                    720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725                    730                    735

<210>  145
<211>  736
<212>  PRT
<213>  vp1, clone hu.3

<400>  145

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1                  5                    10                    15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
```

```
              20                      25                      30
```

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
         35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
         50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                 85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
             100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
         115   120   125

Leu Arg Pro Gly Leu Arg Lys Pro Val Lys Thr Ala Pro Gly Lys Lys
    130   135   140

Arg Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr
145   150   155   160

Gly Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                 165   170   175

Thr Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro
             180   185   190

Pro Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser
         195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Asp Asp Arg Val
225   230   235   240

Ile Ala Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                 245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Cys Asn Asp Asn His
             260   265   270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
         275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Ser Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn
                 325   330   335

Leu Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro
             340   345   350

Tyr Val Pro Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
         355   360   365

Asp Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Page 206

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385　　　　　　　　　　390　　　　　　　　395　　　　　　　　400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe
　　　　　　　　405　　　　　　　　410　　　　　　　　415

Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Cys Gln Ser Leu Asp
　　　　　　420　　　　　　　　425　　　　　　　　430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Asn Lys
　　　435　　　　　　　　440　　　　　　　　445

Thr Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser
450　　　　　　　　455　　　　　　　　460

Gln Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro
465　　　　　　　　470　　　　　　　　475　　　　　　　　480

Gly Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn
　　　　　　　485　　　　　　　　490　　　　　　　　495

Asn Asn Cys Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn
　　　　　500　　　　　　　　505　　　　　　　　510

Gly Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys
　　　　515　　　　　　　　520　　　　　　　　525

Asp Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly
　　530　　　　　　　　535　　　　　　　　540

Lys Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile
545　　　　　　　　550　　　　　　　　555　　　　　　　　560

Thr Asp Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu Gln
　　　　　　　　565　　　　　　　　570　　　　　　　　575

Tyr Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr
　　　　　　580　　　　　　　　585　　　　　　　　590

Thr Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln
　　　　　595　　　　　　　　600　　　　　　　　605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
　　610　　　　　　　　615　　　　　　　　620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625　　　　　　　　630　　　　　　　　635　　　　　　　　640

Lys His Pro Pro Pro Gln Ile Met Ile Lys Ser Thr Pro Val Pro Ala
　　　　　　　　645　　　　　　　　650　　　　　　　　655

Asn Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Ser Ile Thr
　　　　　　　660　　　　　　　　665　　　　　　　　670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
　　　　675　　　　　　　　680　　　　　　　　685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
　　690　　　　　　　　695　　　　　　　　700

Tyr Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val
705　　　　　　　　710　　　　　　　　715　　　　　　　　720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
　　　　　　　　725　　　　　　　　730　　　　　　　　735

<210>　146
<211>　735
<212>　PRT

<210> 2135 <211> VP1; clone hu.25

<400> 146

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Gly Ser Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Arg Gln Leu Asn Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180                 185                 190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195                 200                 205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210                 215                 220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225                 230                 235                 240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245                 250                 255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260                 265                 270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275                 280                 285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290                 295                 300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305                 310                 315                 320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                 330                 335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340                 345                 350
```

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
         355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Pro Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
        435   440   445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Asn Asn Gly Val Tyr
705   710   715   720

Page 209

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725   730   735

<210> 147
<211> 735
<212> PRT
<213> vp1, clone hu.15

<400> 147

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Tyr Lys Gly Glu Pro
    50   55   60

Val Asp Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Gly Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Arg Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Page 210

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Gly Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Leu Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
            370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Asn Lys Thr
            435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
            530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
            610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
                            Page 211

```
              675              680              685

Glu Asp Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690              695              700

Asn Lys Pro Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705              710              715              720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
             725              730              735


<210>  148
<211>  735
<212>  PRT
<213>  vp1, clone hu.16

<400>  148

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10               15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
             20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Tyr Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
             85              90              95

Gly Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100              105              110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115              120              125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130              135              140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145              150              155              160

Lys Ala Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
             165              170              175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180              185              190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195              200              205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210              215              220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225              230              235              240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
             245              250              255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260              265              270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
```

```
             275                    280                    285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290                 295                 300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305                 310                 315                 320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                 330                 335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340                 345                 350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355                 360                 365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370                 375                 380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385                 390                 395                 400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405                 410                 415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420                 425                 430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
        435                 440                 445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450                 455                 460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465                 470                 475                 480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
                485                 490                 495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500                 505                 510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515                 520                 525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530                 535                 540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545                 550                 555                 560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565                 570                 575

Gly Tyr Val Ser Asn Asn Leu Gln Asp Ser Asn Thr Gly Pro Thr Thr
            580                 585                 590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
        595                 600                 605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610                 615                 620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625                 630                 635                 640
```

Page 213

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210> 149
<211> 735
<212> PRT
<213> vp1, clone hu.18

<400> 149

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Glu Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Ser Gly Ser Gly
            195   200   205

Ala Pro Val Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Ser Trp
            290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
            370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Leu Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
            435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
            450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
            530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Page 215

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
             645   650   655

Pro Pro Thr Asn Phe Ser Ser Ser Lys Phe Ala Ser Phe Ile Thr Gln
             660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
             675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
             690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Pro Thr Arg Asn Leu
             725   730   735

<210> 150
<211> 735
<212> PRT
<213> vp1, clone hu.7

<400> 150

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
             20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
             35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
             50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
             85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
             100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
             115   120   125

Leu Gly Leu Val Glu Gly Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
             130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
             165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
             180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
             195   200   205

Page 216

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
    435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Page 217

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210>   151
<211>   735
<212>   PRT
<213>   vp1, clone hu.8

<400>   151

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Thr Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Page 218

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
        210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
        290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
            435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
                        Page 219

```
         530                    535                    540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545                 550                 555                 560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565                 570                 575

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
                580                 585                 590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595                 600                 605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
        610                 615                 620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625                 630                 635                 640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645                 650                 655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660                 665                 670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675                 680                 685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                 695                 700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                 710                 715                 720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                 730                 735


<210>  152
<211>  735
<212>  PRT
<213>  vp1, clone rh.56

<400>  152

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                  55                  60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
```

```
        130                     135                    140
```

```
Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160
```

```
Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175
```

```
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                180                 185                 190
```

```
Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
                195                 200                 205
```

```
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210                 215                 220
```

```
Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225                 230                 235                 240
```

```
Thr Thr Ser Thr Arg Thr Trp Ala Gln Pro Thr Tyr Asn Asn His Leu
                245                 250                 255
```

```
Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260                 265                 270
```

```
Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
                275                 280                 285
```

```
Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290                 295                 300
```

```
Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305                 310                 315                 320
```

```
Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                 330                 335
```

```
Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340                 345                 350
```

```
Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
                355                 360                 365
```

```
Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370                 375                 380
```

```
Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385                 390                 395                 400
```

```
Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405                 410                 415
```

```
Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                420                 425                 430
```

```
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Asn Lys Thr
                435                 440                 445
```

```
Gln Ser Asn Ser Gly Ala Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450                 455                 460
```

```
Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465                 470                 475                 480
```

```
Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
                485                 490                 495
```

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
        500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Arg Gly Ala Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210>   153
<211>   735
<212>   PRT
<213>   vp1, clone hu.11

<400>   153

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Gln Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Page 222

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
         100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
         115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly His Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
             165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
         180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
         195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
             245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
             260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
         275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
             325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
             340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
         355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
             405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
             420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
         435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
                485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr Arg Leu Asn Gly
                500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
        530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu His Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Asn Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
                580   585   590

Glu Asn Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
        610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210>   154
<211>   735
<212>   PRT
<213>   vp1, clone hu.12

<400>   154

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Gln Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly His Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Pro Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Page 225

```
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435             440             445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450             455             460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485             490             495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515             520             525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530             535             540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu His Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565             570             575

Gly Asn Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580             585             590

Glu Asn Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
        595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>   155
<211>   735
<212>   PRT
<213>   vp1, clone hu.9

<400>   155
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30
```

Lys Pro Ala Glu Arg His Gln Asp Asn Ser Arg Gly Leu Val Leu Pro
         35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Ser Asn Gly Leu Asp Lys Gly Glu Pro
         50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
         115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
         130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly His Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
                195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Cys Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
         275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Pro Leu Pro Tyr
                340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
         355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
                              Page 227

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
                485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
        530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu His Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Asn Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Glu Asn Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Cys Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730   735

```
<210>  156
<211>  735
<212>  PRT
<213>  vp1, clone hu.10
```

<400> 156

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Leu Ala Glu Arg His Gln Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly His Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Thr Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Leu Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu His Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Asn Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Glu Asn Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Tyr Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Arg Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Page 230

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725   730   735

<210>   157
<211>   736
<212>   PRT
<213>   vp1, clone hu.48

<400>   157

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Thr Ser Thr Gly Ala Ser Asn Asp Asn His
            260   265   270

Tyr Phe Gly Tyr Gly Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
        275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Glu Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
              325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
              340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
              355   360   365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385   390   395   400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
              405   410   415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
              420   425   430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
              435   440   445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
    450   455   460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
              485   490   495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
              500   505   510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Val Ala Ser His Lys
         515   520   525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530   535   540

Lys Glu Ser Ala Gly Ala Ser Ser Thr Ala Leu Asp Asn Val Met Ile
545   550   555   560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
              565   570   575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
              580   585   590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
         595   600   605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610   615   620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625   630   635   640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
              645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
         660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
    675   680   685

Page 232

```
Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
    690                 695             700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705             710             715                 720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                725             730             735
```

<210> 158
<211> 736
<212> PRT
<213> vp1, clone hu.44

<400> 158

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Arg Pro Gly Pro Pro Pro Pro
            20              25          30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Glu Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Gln Ser Pro Gln Gly Pro Asp Ser Ser Ser Gly Ile Gly
145             150             155             160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180             185             190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
        195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
    210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
    260             265             270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
    275             280             285
```

```
His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290                 295                 300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305                 310                 315                 320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
                325                 330                 335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
            340                 345                 350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
    355                 360                 365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370                 375                 380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385                 390                 395                 400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
                405                 410                 415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
            420                 425                 430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Pro Asn Arg
    435                 440                 445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
    450                 455                 460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465                 470                 475                 480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
                485                 490                 495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
            500                 505                 510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
    515                 520                 525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530                 535                 540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545                 550                 555                 560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
                565                 570                 575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
            580                 585                 590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
    595                 600                 605

Gly Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610                 615                 620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630                 635                 640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
```

Page 234

```
              645                   650                   655
```

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
              660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
              675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
          690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                  725   730   735

<210>   159
<211>   736
<212>   PRT
<213>   vp1, clone hu.46

<400>   159

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
              35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
          50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                  85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
      130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Pro Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                  165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
              180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
          195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
      210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu

```
                    245                 250                 255

    Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
                260                 265                 270

    Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
                275                 280                 285

    His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290                 295                 300

    Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
    305                 310                 315                 320

    Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
                325                 330                 335

    Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
                340                 345                 350

    Tyr Val Leu Gly Ser Ala His Gln Gly Arg Leu Pro Pro Phe Pro Ala
                355                 360                 365

    Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370                 375                 380

    Ser Gln Ala Val Gly Arg Ser Ser Ser Tyr Cys Leu Glu Tyr Phe Pro
    385                 390                 395                 400

    Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
                405                 410                 415

    Glu Glu Val Pro Leu His Ser Ser Cys Ala His Ser Gln Ser Leu Asp
                420                 425                 430

    Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
                435                 440                 445

    Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Arg Asp Leu Leu Phe Ser
    450                 455                 460

    Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
    465                 470                 475                 480

    Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
                485                 490                 495

    Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
                500                 505                 510

    Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
                515                 520                 525

    Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530                 535                 540

    Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
    545                 550                 555                 560

    Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
                565                 570                 575

    Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
                580                 585                 590

    Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
                595                 600                 605
```

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
610   615   620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625   630   635   640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
              645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
              660   665   670

Gln Tyr Ser Ala Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
        690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
              725   730   735

<210>   160
<211>   737
<212>   PRT
<213>   vp1, clone hu.43

<400>   160

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
              20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Pro Arg Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Pro Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
              165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
              180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
245   250   255

Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn
260   265   270

His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
405   410   415

Phe Glu Glu Val Pro Leu His Ser Ser Tyr Ala His Ser Gln Ser Leu
420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Val Gln Tyr Leu Tyr Tyr Leu Asn
435   440   445

Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe
450   455   460

Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu
465   470   475   480

Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp
485   490   495

Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu
500   505   510

Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His
515   520   525

Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe
530   535   540

Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met
545   550   555   560

Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu
565   570   575

Page 238

Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro
            580   585   590

Ala Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp
            595   600   605

Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610   615   620

His Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645   650   655

Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile
            660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser
    690   695   700

Asn Tyr Ala Lys Ser Ala Ser Val Asp Phe Thr Val Asp Asn Asn Gly
705   710   715   720

Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro
            725   730   735

Leu

<210>   161
<211>   738
<212>   PRT
<213>   vp1, clone hu.38

<400>   161

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Page 239

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
              165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
              180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
              195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
              245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
              260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
              275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
      290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
              325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
              340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
      355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
      370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
              405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
              420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
      435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
      450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
              485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
              500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
      515   520   525

Page 240

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
        530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Cys His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210>   162
<211>   736
<212>   PRT
<213>   vp1, clone rh.71

<400>   162

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
            260   265   270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
        275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
            325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
            340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
        355   360   365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385   390   395   400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
            405   410   415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
        420   425   430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
    435   440   445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
    450   455   460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
                              Page 242

465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
                    485   490   495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
                500   505   510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
        515   520   525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530   535   540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545   550   555   560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
                565   570   575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
                580   585   590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
        595   600   605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610   615   620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625   630   635   640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
                660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
        690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                725   730   735

<210>   163
<211>   736
<212>   PRT
<213>   vp1, clone rh.43

<400>   163

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
        20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp

Page 243

65   70   75   80

Gln Gln Leu Glu Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Val Gly Pro Asn Thr Met Ala Ala Gly Gly Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ala Thr Asn Asp Asn
            260   265   270

Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
        290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
            355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
        370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Thr Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

```
Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser
    435                 440                 445

Arg Thr Gln Thr Thr Gly Gly Thr Ala Asn Thr Gln Thr Leu Gly Phe
    450                 455                 460

Ser Gln Gly Gly Pro Asn Thr Met Ala Asn Gln Ala Lys Asn Trp Leu
465                 470                 475                 480

Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Thr Gly Gln
                485                 490                 495

Asn Asn Asn Ser Asn Phe Ala Trp Thr Ala Gly Thr Lys Tyr His Leu
            500                 505                 510

Asn Gly Arg Asn Ser Leu Ala Asn Pro Gly Ile Ala Met Ala Thr His
        515                 520                 525

Lys Asp Asp Glu Glu Arg Phe Phe Pro Val Thr Gly Ser Cys Phe Trp
    530                 535                 540

Gln Gln Asn Ala Ala Arg Asp Asn Ala Asp Tyr Ser Asp Val Met Leu
545                 550                 555                 560

Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr Glu Glu
                565                 570                 575

Tyr Gly Ile Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala Pro Gln
            580                 585                 590

Ile Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val Trp Gln
        595                 600                 605

Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610                 615                 620

Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630                 635                 640

Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645                 650                 655

Asp Pro Pro Thr Thr Phe Asn Gln Ser Lys Leu Asn Ser Phe Ile Thr
            660                 665                 670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675                 680                 685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
    690                 695                 700

Tyr Tyr Lys Ser Thr Ser Val Asp Phe Ala Val Asn Thr Glu Gly Val
705                 710                 715                 720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                 730                 735
```

```
<210>   164
<211>   735
<212>   PRT
<213>   vp1, clone hu.35

<400>   164
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Arg Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20                  25                  30
```

Glu Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
        260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
        340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
    355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

```
Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405             410             415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Gly Arg
            420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Ser Arg Thr
            435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485             490             495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515             520             525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580             585             590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 165
<211> 3161
<212> DNA
<213> new AAV serotype, clone hu 136.1

<400> 165

```
gattgaattt agcggccgcg aattcgccct tgctgcgtca actggaccaa tgagaacttt      60
ccattcaatg attgcgtcga caagatggtg atctggtggg aggagggaaa gatgaccgcc     120
aaggtcatgg agtcggccaa agccattctc ggaggaagca aggtgcgcgt ggaccagaaa     180
tgtaagtcct cggcccagat agacccgact cccgtgattg tcacctccaa caccaacatg     240
tgcgccgtga ttgacgggaa ctcaacgacc ttcgagcacc agcagccgtt gcaagaccgg     300
atgttcaaat ttgaactcac ccgccgtctg gatcatgact ttgggaaggt caccaagcag     360
gaagtcaaag actttttccg gtgggcaaag gatcacgtgg ttgaggtgga gcatgaattc     420
tacgtcaaaa agggtggagc caagaaaaga cccgccccca gtgacgcaga tataagtgag     480
cccaaacggg cgcgcgggtc agttgcgcag ccatcgacgt cagacgcgga agcttcgatc     540
aactacgcgg acaggtacca aaacaaatgt tctcgtcacg tgggcatgaa tctgatgctg     600
tttccctgca gacaatgcga gagaatgaat caaaattcaa atatctgctt cactcacgga     660
cagaaggact gtttagagtg ctttcccgtg tcagaatctc aacccgtttc tgtcgtcaaa     720
aaggcgtatc agaaactttg ctacattcat catatcatgg gaaaggtgcc agacgcttgc     780
actgcctgcg atctggtcaa tgtggatttg gatgactgca tctctgaaca ataaatgatt     840
taaatcaggt atggctgccg atggttatct tccagattgg ctcaaggaca ctctctctga     900
aggaataaga cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg     960
gcataaggac gacagcgggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa    1020
cggactcgac aagggagagc cggtcaacga ggcagacgcc gcggccctcg agtacgacaa    1080
ggcctacgac cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga    1140
cgcggagttt caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc    1200
agtcttccag gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa    1260
gacggctccg ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc    1320
gggaacagga aaagcgggcc agcagcctgc gagaaagaga ttgaattttg gtcagactgg    1380
agacgcagac tccgtacctg accccagcc tctcggacag ccaccagcag cccctctgg    1440
tctgggaact aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg    1500
cgccgacgga gtgggtaatt cctcgggaag ttggcattgc gattccacat ggatgggcga    1560
cagagtcatc accaccagca cccgaacctg ggctctgccc acctacaaca accatctgta    1620
caagcagatc tccagccaat caggagccag caacgacaac cactactttg ctacagcac    1680
cccttggggg tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca    1740
aagactcatc aacaacaact ggggattccg gcccaagaga ctcaacttca agctctttaa    1800
cattcaagtc aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac    1860
cagcacggtt caggtgttta ctgactcgga gtaccagctc ccgtacgtcc ccggctcggc    1920
gcatcaagga tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata    1980
cctcacctg aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta    2040
ctttccttct cagatgcttc gtaccggaaa caactttacc ttcagctaca ccttttgagga    2100
tgttcctttc cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct    2160
catcgaccag tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca    2220
gtccaggctt cagtttttctc aggccggagc aagtgacatt cgggaccagt ctaggaactg    2280
gcttcctgga ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa    2340
cagtgaatac tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt    2400
gaatccgggc ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcaaag    2460
cggggttctc atctttggga agcaaggct agagaaaaca aatgtggaca ttgaaaaggt    2520
catgattaca gacgaagagg aaatcagaac caccaatccc gtggccacgg agcagtatgg    2580
ttctgtatct accaacctcc agagcggcaa cacacaagca gctactgcag atgtcaacac    2640
acaaggcgtt cttccaggca tggtctggca ggacagagac gtgcacctgc aggggcctat    2700
ctgggcaaag attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt    2760
```

```
tggacttaaa caccctcctc cacagattct catcaagaac accccggtac ctgcaaatcc   2820
ttcgaccacc ttcagtgcgg caaagtttgc ttccttcatc acacagtatt ccacagggca   2880
ggtcagcgtg gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaaccccga   2940
gatccagtac acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa   3000
tggtgtgtat tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaatt   3060
gcttgttaat caataaaccg tttaattcgt ttcagttgaa ctttggtctc tgcgaagggc   3120
gaattcgttt aaaccctgca ggactagtcc ctttagtgag g                       3161
```

```
<210>  166
<211>  3162
<212>  DNA
<213>  new AAV serotype, clone hu 140.1

<400>  166
gaattgaatt tagcggccgc gaattcgccc ttcgcagaga ccaaagttca actgaaacga     60
attaaacggt ttattgatta acaagcaatt acagattacg agtcaggtat ctggtgccaa    120
tggggcgagg ctctgaatac acgccattag tgtccacagt aaagtccaca ttaacagact    180
tgttgtagtt ggaagtgtac tgaatttcgg gattccagcg tttgctgttt tccttctgca    240
gctcccactc gatctccacg ctgacctgtc ccgtggagta ctgtgtgatg aaggaagcaa    300
actttgccgc actgaaggtg gtcgaaggat tcgcaggtac cggggtgttc ttgatgagaa    360
tctgtggagg agggtgttta agtccgaatc cacccatgag gggagagggg tgaaaatgtc    420
cgtccgtgtg tggaatcttt gcccagatgg cccctgaag gtacacatct ctgtcctgcc    480
agaccatgcc tggaagaacg ccttgtgtgt tgacatctgc ggtagctgct tgtctgttgc    540
ctctctggag gttggtagat acagaaccgt actgctccgt agccacggga ttggttgtcc    600
tgatttcctc ttcgtctgta atcatgacct tttcaatgtc cacatttgtt ttctctgagc    660
cttgcttccc aaagatgaga accccgctct gaggaaaaaa ctttcttca ttgtccttgt     720
ggcttgccat ggccgggccc ggattcacca gagagtctct gccattgagg tggtacttgg    780
tagctccagt ccacgagtat tcactgttgt tgttatccgc agatgtcttt gatactcgct    840
gctggcggta acagggtcca ggaagccagt tcctagactg gtcccgaatg tcactcgctc    900
cggcctgaga aaactgaagc cttgactgcg tggtggttcc acttggagtg tttgttgtgc    960
tcaagtaata caggtactgg tcgatgagag gattcatgag acgtccaga ctctggctgt    1020
gagcgtagcc gctgtggaaa ggaacgtcct caaaagtgta gctgaaggta agttgtttc    1080
cggtacgcag catctgagaa ggaaagtact ccaggcagta aaatgaagag cgtcctactg    1140
cctgactccc gttgttcagg gtgaggtatc catactgtgg caccatgaag acgtctgctg    1200
ggaacggcgg gaggcatcct tgatgcgccg agccgaggac gtacgggagc tggtactccg    1260
agtcagtaaa cacctgaacc gtgctggtaa ggttattggc aatcgtcgtc gtaccgtcat    1320
tctgcgtgac ctctttgact tgaatgttaa agagcttgaa gttgagtctc ttgggtcgga    1380
atccccagtt gttgttgatg agtctttgcc agtcacgtgg tgaaaagtgg cagtggaatc    1440
tgttgaagtc aaaataccc caagggggtgc tgtagccaaa gtagtgattg tcgttcgagg    1500
ctcctgattg gctggaaatt tgtttgtaga ggtggttgtt gtaggtgggc agggcccagg    1560
ttcgggtgct ggtggtgatg actctgtcgc ccatccatgt ggaatcgcaa tgccaatttc    1620
ccgaggaatt acccactccg tcggcgccct cgttattgtc tgccattggt gcgccactgc    1680
ctgtagccat cgtattagtt cccagaccag aggggggctgc tggtggctgt ccgagaggct    1740
gggggtcagg tactgagtct gcgtctccag tctgaccaaa attcaatctt ttctttgcag    1800
gctgctggcc cgcctttccg gttcccgagg aggagtctgg ctccacagga gagtgctcta    1860
ccggcctctt ttttcctgga gccgtcttga caggttcccc aaccaggccc agaggttcaa    1920
gaaccctctt tttcgcctgg aagactgctc gtccgaggtt gcccccaaaa gacgtatctt    1980
ctttaaggcg ctcctgaaac tccgcgtcgg cgtggttgta cttgaggtac gggttgtctc    2040
cgctgtcgag ctgccggtcg taggctttgt cgtgctcgag ggccgcggcg tctgcctcgt    2100
```

Page 249

```
tgaccggctc tcccttgtcg agtccgttga agggtccgag gtacttgtac ccaggaagca   2160

caagacccct gctgtcgtcc ttatgccgct ctgcgggctt tggtggtggt gggccaggtt   2220

tgagcttcca ccactgtctt attccttcag agagagtgtc ctcgagccaa tctggaagat   2280

aaccatcggc agccatacct gatttaaatc atttattgtt caaagatgca gtcatccaaa   2340

tccacattga ccagatcgca ggcagtgcaa gcgtctggca cctttcccat gatatgatga   2400

atgtagcaca gtttctgata cgcctttttg acgacagaaa cgggttgaga ttctgacacg   2460

ggaaagcact ctaaacagtc tttctgtccg tgagtgaagc agatatttga attctgattc   2520

attctctcgc attgtctgca gggaaacagc atcagattca tgcccacgtg acgagaacat   2580

ttgttttggt acctgtctgc gtagttgatc gaagcttccg cgtctgacgt cgatggctgc   2640

gcaactgact cgcgcacccg tttgggctca cttatatctg cgtcactggg ggcgggtctt   2700

ttcttggctc cacccttttt gacgtagaat tcatgctcca cctcaaccac gtgatccttt   2760

gcccaccgga aaaagtcttt gacttcctgc ttggtgacct tcccaaagtc atgatccaga   2820

cggcgggtga gttcaaattt gaacatccgg tcttgcaacg gctgctggtg ttcgaaggtc   2880

gttgagttcc cgtcaatcac ggcgcacatg ttggtgttgg aggtgacgat cacgggagtc   2940

gggtctatct gggccgagga cttgcatttc tggtccacgc gcaccttgct tcctccgaga   3000

atggctttgg ccgactccac gaccttggcg gtcatcttcc cctcctccca ccagatcacc   3060

atcttgtcga cacagtcgtt gaagggaaag ttctcattgg tccagttgac gcagcaaggg   3120

cgaattcgtt taaacctgca ggactagtcc ctttagtgag gg   3162
```

<210> 167
<211> 3164
<212> DNA
<213> new AAV serotype, clone hu 140.2

<400> 167

```
gcgaattgaa tttagcggcc gcgaattcgc ccttcgcaga gaccaaagtt caactgaaac    60

gaattaaacg gtttattgat taacaagcaa ttacaaatta cgagtcaggt atctggtgcc   120

aatggggcga ggctctgaat acacgccatt agtgtccaca gtaaagtcca cattaacaga   180

cttgttgtag ttggaagtgt actgaatttc gggattccag cgtttgctgt tttccttctg   240

cagctcccac tcgatctcca cgctgacctg tcccgtggag tactgtgtga tgaaggaagc   300

aaactttgcc gcactgaagg tggtcgaagg attcgcaggt accggggtgt tcttgatgag   360

aatctgtgga ggagggtgtt taggtccgaa tccacccatg aggggagagg ggtgaaaatg   420

tccgtccgtg tgtggaatct ttgcccagat gggcccctga aggtacacat ctctgtcctg   480

ccagaccatg cctggaagaa cgccttgtgt gttgacatct gcggtagctg cttgtctgtt   540

gcctctctgg aggttggtag atacagaacc atactgctcc gtagccacgg gattggttgt   600

cctgatttcc tcttcgtctg taatcatgac cttttcaatg tccacatttg ttttctctga   660

gccttgcttc ccaaagatga gaaccccgct ctgaggaaaa aactttttctt cattgtcctt   720

gtggcttgcc atggccgggc ccggattcac cagagagtct ctgccattga ggtggtactt   780

ggtagctcca gtccacgagt attcactgtt gttgttatcc gcagatgtct ttgatactcg   840

ctgctggcgg taacagggtc caggaagcca gttcctagac tggtcccgaa tgtcactcgc   900

tccggcctga gaaaactgaa gccttgactg cgtggtggtt ccacttggag tgtttgttgt   960

gctcaagtaa tacaggtact ggtcgatgag aggattcatg agacggtcca gactctggct  1020

gtgagcgtag ctgctgtgga aaggaacgtc ctcaaaagtg tagctgaagg taaagttgtt  1080

tccggtacgc agcatctgag aaggaaagta ctccgggcag taaaatgaag agcgtcctac  1140

tgcctgactc ccgttgctca gggtgaggta tccatactgt ggcaccatga agacgtctgc  1200

tgggaacggc gggaggcatc cttgatgcgc cgagccgagg acgtacggga gctggtactc  1260

cgagtcagta aacacctgaa ccgtgctggt aaggttattg gcaatcgtcg tcgtaccgtc  1320

attctgcgtg acctctttga cttgaatgtt aaagagcttg aagttgagtc tcttgggtcg  1380

gaatcccag ttgttgttga tgagtctttg ccagtcacgt ggtgaaaagt ggcagtggaa  1440
```
Page 250

```
tctgttgaag tcaaaatacc cccaaggggt gctgtagcca aagtagtgat tgtcgttcga   1500

ggctcctgat tggctggaaa tttgtctgta gaggtggttg ttgtaggtgg gcagggccca   1560

ggttcgggtg ctggtggtga tgactctgtc gcccatccat gtggaatcgc aatgccgatt   1620

tcccgaggaa ttacccactc cgtcggcgcc ctcgttattg tctgccattg gtgcgccact   1680

gcctgtagcc atcgtattag ttcccagacc agagggggct gctggtggct gtccgagagg   1740

ctgggggtca ggtactgagt ctgcgtctcc agtctgacca aaattcaatc tttttcttgc   1800

aggctgctgg cccgcctttc cggttcccga ggaggagtct ggctccacag gagagtgctc   1860

taccggcctc tttttttcccg gagccgtctt aacaggttcc ccaaccaggc ccagaggttc   1920

aagaaccctc tttttcgcct ggaagactgc tcgtccgagg ttgcccccaa aagacgtatc   1980

ttctttaagg cgctcctgaa actccgcgtc ggcgtggttg tacttgaggt acgggttgtc   2040

tccgctgtcg agctgccggt cgtaggcttt gtcgtgctcg agggccgcgg cgtctgcctc   2100

gttgaccggc tctcccttgt cgagtccgtt gaagggtccg aggtacttgt acccaggaag   2160

cacaagaccc ctgctgtcgt ccttatgccg ctctgcgggc tttggtggtg gtgggccagg   2220

tttgagcttc caccactgtc ttattccttc agagagagtg tcctcgagcc aatctggaag   2280

ataaccatcg gcagccatac ctgatttaaa tcatttattg ttcaaagatg cagtcatcca   2340

aatccacatt gaccagatcg caggcagtgc aagcgtctgg cacctttccc atgatatgat   2400

gaatgtagca cagtttctga tacgcctttt tgacgacaga aacgggttga gattctgaca   2460

cgggaaagca ctctaaacag tctttctgtc cgtgagtgaa gcagatattt gaattctgat   2520

tcattctctc gcattgtctg cagggaaaca gcatcagatt catgcccacg tgacgagaac   2580

atttgttttg gtacctgtct gcgtagttga tcgaagcttc cgcgtctgac gtcgatggct   2640

gcgcaactga ctcgcgcacc cgtttgggcc cacttatatc tgcgtcactg ggggcgggtc   2700

ttttcttggc tccacccttt ttgacgtaga attcatgctc cacctcaacc acgtgatcct   2760

ttgcccaccg gaaaaagtct ttgacttcct gcttggtgac cttcccaaag tcatgatcca   2820

gacggcgggt gagttcaaat ttgaacatcc ggtcttgcaa cggctgctgg tgttcgaagg   2880

tcgttgagtt cccgtcaatc acggcgcaca tgttggtgtt ggaggtgacg atcacgggag   2940

tcgggtctat ctgggccgag gacttgcatt tctggtccac gcgcaccttg cttcctccga   3000

gaatggcttt ggccgactcc acgaccttgg cggtcatctt cccctcctcc caccagatca   3060

ccatcttgtc gacacagtcg ttgaagggaa agttctcatt ggtccagttg acgcagcaag   3120

ggcgaattcg tttaaacctg caggactagt ccctttagtg aggg                    3164
```

<210> 168
<211> 3159
<212> DNA
<213> new AAV serotype, clone hu 147.2

<400> 168
```
gattgattta gcggccgcga attcgcccttt gctgcgtcaa ctggaccaat gagaactttc     60

ccttcaacga ttgcgtcgac aagatggtga tctggtggga ggagggaaag atgaccgcca    120

aggtcgtgga gtcggccaaa gccattctcg gaggaagcaa ggtgcgtgtg gaccaaaagt    180

gcaagtcttc ggcccagatc gacccgactc ccgtgatcgt cacctccaac accaacatgt    240

gcgccgtgat tgatggaaac tcaacgacct tcgagcacca gcagccgttg caagaccgga    300

tgttcaaatt tgaacttacc cgccgtctgg atcatgactt tggaaaggtc accaagcagg    360

aagtgaaaga ctttttccgg tgggcaaagg atcacgtggt tgaggtggag catgagttct    420

acgtcaaaaa gggtggagcc aaaaaaagac ccgcccccag tgacgcagat ataagtgagc    480

ccaaacgggc gcgcgagtca gttgcgcagc catcgacgtc agacgcggaa gcttcgatca    540

actacgcgga caggtaccaa aacaaatgtt ctcgtcacgt gggcatgaat ctgatgctgt    600

ttccctgcag acaatgcgag agaatgaatc agaattcaaa tatctgcttc actcacggac    660

agaaagactg tccatagtgc tttcccgtgt cagaatctca acccgtttct gtcgtcaaaa    720

aggcgtatca gaaactgtgc tacattcatc acatcatggg aaaggtgcca gacgcttgca    780
```

```
ctgcttgcga cctggtcaat gtggatttgg atgactgcat ctctgaacaa taaatgattt      840

aaatcaggta tggctgccga tggttatctt ccagattggc tcgaggacac tctctctgaa      900

ggaataagac agtggtggaa gctcaaacct ggcccaccac caccaaagcc cgcagagcgg      960

cataaggacg acagcagggg tcttgtgctt cctggataca agtacctcgg acccttcaac     1020

ggactcgaca agggagagcc ggtcaacgag gcagacgccg cggccctcga gcacgacaag     1080

gcctacgacc ggcagctcga cagcggagac aacccgtacc tcaagtacaa ccacgccgac     1140

gcggagtttc aggagcgcct taaagaagat acgtcttttg ggggcaacct cggacgagca     1200

gtcttccagg cgaaaaagag ggttcttgaa cctctgggcc tggttgagga acctgttaag     1260

acggctccgg gaaaaaagag gccggtagag cactctcctg tggagccaga ctcctcctcg     1320

ggaaccggaa aagcgggcaa ccagcctgca agaaaaagat tgaatttcgg tcagactgga     1380

gacgcagact ccgtacctga cccccagcct ctcggacagc caccagcatc ccctctggt      1440

ctgggaacta atacgatggc tacaggcagt ggcgcaccaa tggcagacaa taacgagggc     1500

gccgacggag tgggtaattc ctcgggaaat tggcattgcg attccacatg gatgggcgac     1560

agagtcgtca ccaccagcac ccgcacctgg gccctgccca cctacaacaa ccacctctac     1620

aagcagattt ccagccaatc aggagccagc aacgacaacc actactttgg ctacagcacc     1680

ccttgggggt attttgactt caacagattc cactgccact tttcgccacg cgactggcag     1740

agactcatca caacaactg gggattccgg cccaaaagac tcaacttcaa gctgtttaac     1800

attcaagtca aggaggtcac gcagaatgac ggtacgacga cgattgccaa taaccttacc     1860

agcacggttc aggtgtttac tgacttggag taccagctcc cgtacgtcct cggctcggcg     1920

catcaaggat gcctcccgcc gttcccagca gacgtcttca tggtgccaca gtatggatac     1980

ctcaccctga caacgggag tcaggcggta ggacgctctt cctttactg cctggagtac     2040

tttccttctc agatgcttcg caccggaaac aactttacct tcagctacac ttttgaagac     2100

gttcctttcc acagcagcta cgctcacagt caaagtctgg accgtctcat gaatcctctc     2160

atcgaccagt acctgtatta cttgagcaga acaaacactc caagcggaac cactacgcag     2220

tccaggcttc agttttctca ggccggagcg agtgacattc gggaccagtc taggaactgg     2280

cttcctggac cctgttaccg ccagcagcga gtatcaaaga cagctgcgga taacaacaac     2340

agtgaatact cgtggactgg agctaccaag taccacctca atggcagaga ctctctggtg     2400

aatccgggcc cggccatggc cagccacaag gacgatgaag aaaagttttt tcctcaaagc     2460

ggggttctca tctttgggaa gcaaggctca gagaaaacaa atgtggacat tgaaaaggtc     2520

atgattacag acgaagagga aatcaggacc accaatcccg tggctacgga gcagtatggt     2580

tctgtatcta ccaacctcca gagcggcaac acacaagcag ctacctcaga tgtcaacaca     2640

caaggcgttc ttccaggcat ggtctggcag gacagagacg tgtacctgca ggggcccatc     2700

tgggcaaaaa ttccacacac ggacggacat tttcacccct ctcccctcat gggcggattt     2760

ggacttaaac accctcctcc acagattctc attaagaata ccccggtacc tgcgaatcct     2820

tcgaccacct tcagcgcggc aaagtttgct tccttcatca cacagtattc cacggggcag     2880

gtcagcgtgg agatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaatcccgaa     2940

attcagtaca cttccaacta caacaaatct gttaatgtgg actttactgt ggacactaat     3000

ggggtgtatt cagagcctcg ccctattggc accagatacc tgactcgtaa tctgtaattg     3060

cttgttaatc aataaaccgt ttaattcgtt tcagttgaac tttggtctct gcgaagggcg     3120

aattcgttta aacctgcagg actagtccct ttagtgagg                           3159
```

```
<210>  169
<211>  3156
<212>  DNA
<213>  new AAV serotype, clone hu 147.3

<400>  169
cgattgaatt tagcggccgc gaattcgccc ttgctgcgtc aacggaccaa tgagaacttt       60

cccttcaacg attgcgtcga caagatggtg atctggtggg aggaggggaaa gatgaccgcc      120
```

```
aaggtcgtgg agtcggccaa agccattctc ggaggaagca aggtgcgtgt ggaccaaaag    180
tgcaagtctt cggcccagat cgacccgact cccgtgatcg tcacctccaa caccaacatg    240
tgcgccgtga ttgatggaaa ctcaacgacc ttcgagcacc agcagccgtt gcaagaccgg    300
atgttcaaat ttgaacttac ccgccgtctg gatcatgact ttggaaaggt caccaagcag    360
gaagtgaaag acttttttccg gtgggcaaag gatcacgtgg ttgaggtgga gcatgagttc    420
tacgtcaaaa agggtggagc caaaaaaaga cccgccccca gtgacgcaga tataagtgag    480
cccaaacggg cgcgcgagtc agttgcgcag ccatcgacgt cagacgcgga agcttcgatc    540
aactacgcgg acaggtacca aaacaaatgt tctcgtcacg tgggcatgaa tctgatgctg    600
tttccctgca gacaatgcga gcgaatgaat cagaattcaa atatctgctt cactcacgga    660
cagaaagact gtttagagtg ctttcccgtg tcagaatctc aacccgtttc tgtcgtcaaa    720
aaggcgtatc agaaactgtg ctacattcat cacatcatgg gaaaggtgcc agacgcttgc    780
actgcttgcg acctggtcaa tgtggatttg gatgactgca tctctgaaca ataaatgatt    840
taaatcaggt atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga    900
aggaataaga cagtggtgga agctcaaacc tggcccacca ccaaagcccg cagagcggca    960
taaggacgac agcaggggtc ttgtgcttcc tggatacaag tacctcggac ccttcaacgg   1020
actcgacaag ggagagccgg tcaacgaggc agacgccgcg ccctcgagc acgacaaggc    1080
ctacgaccgg cagctcgaca gcggagacaa cccgtacctc aagtacaacc acgccgacgc   1140
ggagtttcag gagcgcctta agaagatac gtctttggg ggcaacctcg gacgagcagt    1200
cttccaggcg aaaaagaggg ttcttgaacc tctgggcctg gttgaggaac ctgttaagac   1260
ggctccggga aaaaagaggc ccgtagagca ctctcctgtg gagccagact cctcctcggg   1320
aaccggaaaa gcgggcaacc agcctgcaag aaaaagattg aatttcggtc agactggaga   1380
cgcagactcc gtacctgacc cccagcctct cggacagcca ccagcagccc cctctggtct   1440
gggaactaat acgatggcta caggcagtgg cgcaccaatg gcagacaata acgagggcgc   1500
cgacggagtg ggtaattcct cgggagattg gcattgcgat tccacatgga tgggcgacag   1560
agtcatcacc accagcaccc gcacctgggc cctgcccacc tacaacaacc acctctacaa   1620
gcagatttcc agccaatcag gagccagcaa tgacaaccac tactttggct acagcacccc   1680
ttgggggtat tttgacttca acagattcca ctgccacttt tcgccacgcg actggcagag   1740
actcatcaac aacaactggg gattccggcc caaaagactc aacctcaagc tgtttaacat   1800
tcaagtcaag gaggtcacgc agaatgacgg tacgacgacg attgccaata accttaccag   1860
cacggttcag gtgtttactg acttggagta ccagctcccg tacgtcctcg gctcggcgca   1920
tcaaggatgc ctcccgccgt tcccagcaga cgtcttcatg gtgccacagt atggatacct   1980
caccctgaac aacgggagtc aggcggtagg acgctcttcc ttttactgcc tggagtactt   2040
tccttctcag atgcttcgta ccggaaacaa ctttaccttc agctacactt ttgaagacgt   2100
tcctttccac agcagctacg ctcacagtca aagtctggac cgtctcatga atcctctcat   2160
cgaccagtac ctgtattact tgagcagaac aaacactcca agcggaacca ctacgcagtc   2220
caggcttcag ttttctcagg ccggagcgag tgacattcgg gaccagtcta ggaactggct   2280
tcctggaccc tgttaccgcc agcagcgagt atcaaagaca gctgcggata caacaacgg    2340
tgaatactcg tggactggag ctaccaagta ccacctcaat ggcagagact ctctggtgaa   2400
tccgggcccg gccatggcca gccacaagga cgatgaagaa aagttttttc ctcaaagcgg   2460
ggttctcatc tttgggaagc aaggctcaga gaaaacaaat gtggacattg aaaaggtcat   2520
gattacagac gaagaggaaa tcaggaccac caatcccgtg ctacggagc agtatggttc    2580
tgtatctacc aacctccaga gcggcaacac acgagcagct acctcagatg tcaacacaca   2640
aggcgttctt ccaggcatgg tctggcagga cagagacgtg tacctgcagg ggcccatctg   2700
ggcaaaaatt ccacacacgg acggacattt tcacccctct cccctcatgg gcggatttgg   2760
acttaaacac cctcctccac agattctcat taagaatacc ccggtacctg cgaatccttc   2820
```

```
gaccactttc agcgcggcaa agtttgcttc cttcatcaca cagtattcca cggggcaggt   2880

cagcgtggag atcgagtggg agctgcagaa ggagaacagc aaacgctgga atcccgaaat   2940

tcagtacact tccaactaca acaaatctgt taatgtggac tttactgtgg acactaatgg   3000

ggtgtattca gagcctcgcc ctattggcac cagatacctg actcgtaatc tgtaattgct   3060

tgttaatcaa taaaccgttt aattcgtttc agttgaactt tggtctctgc gaagggcgaa   3120

ttcgtttaaa cctgcaggac tagtcccttt agtgag                             3156
```

<210> 170
<211> 3158
<212> DNA
<213> new AAV serotype, clone hu 161.10

<400> 170

```
gattgaattt agcggccgcg aattcgccct tgctgcgtca actggaccaa tgagaacttt     60

cctttcaatg attgcgtcga caagatggtg atctggtggg aggagggaaa gatgaccgcc    120

aaggtcgtgg agtcggccaa agccattctc ggaggaagca aggtgcgcgc ggaccagaaa    180

tgcaagtcct cggcccagat agacccgact cccgtgattg tcacctccaa caccaacatg    240

tgcgccgtga ttgacgggaa ctcaacgacc ttcgaacacc agcagccgtt gcaagaccgg    300

atgttcaaat ttgaactcac ccgccgtctg gatcatgact ttgggaaggt caccaagcag    360

gaagtcaaag acttttccg gtgggcaaag gatcacgtgg ttgaggtgga gcatgaattc    420

tacgtcaaaa agggtggagc taagaaaaga cccgccccca gtgacgcaga tataagtgag    480

cccaaacggg cgcgcgagtc agttgcgcag ccatcgacgt cagacgcgga agcttcgatc    540

aactacgcgg gcaggtacca aaacaaatgt tctcgtcacg tgggcatgaa tctgatgctg    600

tttccctgca gacaatgcga gagaatgaat cagaattcaa atatctgctt cactcacgga    660

cagaaagact gtttagagtg ctttcccgtg tcagaatctc aacccgtttc tgtcgtcaaa    720

aaggcgtatc agaaactttg ctacattcat catatcatgg aaaggtgcc agacgcttgc    780

actgcctgcg atctggtcaa tgtggatttg gatgactgca tctctgaaca ataaatgatt    840

taaatcaggt atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga    900

aggaataaga cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg    960

gcataaggac gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa   1020

cggactcgac aagggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa   1080

ggcctacgac cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga   1140

cgcggagttt caggagcgcc ttaaagaaga tacgtctttt ggggcaacc tcggacgagc   1200

agtcttccag gcaaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa   1260

aacggctccg ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc   1320

gggaaccgga aaagcgggcc agcagcctgc aagaaaaaga ttgaatttcg gtcagactgg   1380

agacgcagac tccgtacctg accccagcc tctcggacag ccaccagcag cccctctgg   1440

tctgggatct actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg   1500

tgccgatgga gtgggtaatt cctcgggaaa ttggcattgc gattcccaat ggctgggcga   1560

cagagtcatc accaccagca cccgcacctg ggccctgccc acctacaaca accacctcta   1620

caagcaaatc tccagccaat caggagcctc aaacgacaac cactactttg ctacagcac   1680

cccctggggg tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca   1740

aagactcatc aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa   1800

cattcaagtc aaagaggtca cgcagaatga cggtacgacg acgattgcca taaccttac   1860

cagcacggtt caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc   1920

gcatcaagga tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata   1980

cctcaccctg aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta   2040

ctttcctct cagatgctgc gtaccggaaa caactttcaa ttcagctaca cttttgaaga   2100

cgtgcctttc cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct   2160
```

```
ggtcgacag tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca    2220
gtctcggcta ctgtttagcc aagctggacc caccaacatg tctcttcaag ctaaaaactg    2280
gctgcctgga ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa    2340
cagcaacttt ccctggactg cagctacaaa gtatcatcta aatggccggg actcgttggt    2400
taatccagga ccagctatgg ccagtcacaa ggatgacgaa gaaaagtttt tccccatgca    2460
tggaacccct atatttggta aacaaggaac aaatgccaac gacgcggatt tggaaaatgt    2520
catgattaca gatgaagaag aaatcaggac caccaatccc gtggctacgg agcagtacgg    2580
aactgtatca aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatca    2640
ccaaggagcg ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat    2700
ttgggccaag attcctcaca ccgatggaca ctttcatcct tctccactga tgggaggttt    2760
tggactcaaa cacccacctc ctcaaatcat gatcaaaaac actcccgttc cagccaatcc    2820
tcccacaaac ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca    2880
ggtcagcgtg gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga    2940
aattcagtac acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa    3000
tggtgtgtat tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaatt    3060
gcttgttaat caataaaccg tttaattcgt ttcagttgaa ctttggtctc tgcgaagggc    3120
gaattcgttt aaacctgcag gactagtccc tttagtga                          3158
```

```
<210>   171
<211>   3167
<212>   DNA
<213>   new AAV serotype, clone hu 172.1

<400>   171
attgaattta gcggccgcga attcgccctt cgcagagacc aaagttcaac tgaaacgaat     60
taaacggttt attgattaac aagcaattac agattacgag tcaggtacct ggtgccaatg    120
gggcgaggct ctgaatacac accattagtg tccacagtaa agtccacatt aacagatttg    180
ttgtagttgg aagtgtactg aatctcggga ttccagcgtt tgctgttctc cttctgcagc    240
tcccactcga tctccacgct gacctgcccc gtggagtact gtgtaatgaa ggaagcaaac    300
tttgccgcac tgaaggtagt cgaaggattc gcaggtaccg gggtgttctt gatgagaatc    360
tgcgggggag ggtgtttaag tccgaatccg cccatgaggg gagaggggtg aaaatgtccg    420
tccgtgtgtg gaatctttgc ccagatgggc ccctgcaggt acacgtctct gtcctgccac    480
accatgcctg gaagaacgcc ttgtgtgttg acatctgagg tagctgcttg tgtgttgccg    540
ctctggaggt tggtagatac agaaccatac tgctccgtag ccacgggatt ggtggtcctg    600
atttcctctt cgtctgtaat catgaccttt tcaatgtcca cattagtttt tcccgagtct    660
tgtttccaa agatgagaac cccgctctga ggaaaaaact tttcttcatc gtccttgtgg    720
ctggccatgg ccgggcccgg attcaccaga gagtctcttc cattaaggtg gtacttggta    780
gctccagtcc acgagtattc actgttgttg ttatccgcag atgtctttga tactcgctgc    840
tggcggtaac agggtccagg aagccagttc ctagactggt cccgaatgtc acttgctccg    900
gcctgagaaa actgaagcct tgactgcgtg gtggttccgc ttggagtgtt tgttctgctc    960
aagtaataca ggtactggtc gatgagagga ttcatgagac ggtccaaact ctggctgtgg   1020
gcgtagctgc tgtggaaagg aacgtcctca aaggtgtagc tgaaggtaaa gttgtttccg   1080
gtacgcagca tctgagaagg aaagtactcc aggcagtaaa atgaagagcg tcctactgcc   1140
tgactcccgt tgttcagggt gaggtatcca tactgtggca ccatgaagac gtctgctggg   1200
aacggcggga ggcatccttg atgcgccgag ccgaggacgt acgggagctg gtactccgag   1260
tcagtaaaca cctgaaccgt gctggtaagg ttattggcaa tcgtcgtcgt accgtcattc   1320
tgcgtgacct ccttgacttg aatgttaaag agcttgaagt tgagtctttt gggccggaat   1380
ccccaattgt tgttgatgag tctttgccag tcacgtggcg aaaagtggca gtggaatctg   1440
ttgaagtcaa aatacccca aggggtgctg tagccaaagt agtggttgtc gtttgaggct   1500
```

```
cctgactggc tggaaatctg cttgtagagg tggttgttgt aggtgggcag agcccaggtg   1560
cgggtgctgg tggtgatgac tctgtcgccc atccatgtgg aatcgcaatg ccaatttccc   1620
gaggaattac ccactccgtc ggcgccctcg ttattgtctg ccattggtgc gccactgcct   1680
gtagccatcg tattagttcc cagaccagag ggggctgctg gtggctgtcc gagaggctgg   1740
gggtcaggta cggagtctgc gtctccagtc tgaccgaaat tcaatctctt tcttgcaggc   1800
tgctggcccg ctttttccggt tcccgaggag gagtctggct ccgcaggaga gtgctctacc   1860
ggcctctttt ttcccggagc cgtcttaaca ggttcctcaa ccaggcccag aggttcaaga   1920
accctctttt tcgcctggaa gactgctcgt ccgaggttgc ccccaaaaga cgtatcttct   1980
ttaagacgct cctggaactc cgcgtcggcg tggttgtact tggggtacgg gttgtctccg   2040
ctgtcgagct gccggtcgta ggccttgtcg tgctcgaggg ccgcggcgtc tgcctcgttg   2100
accggctctc ccttgtcgag tccgttgaag ggtccaaggt acttgtaccc aggaagcaca   2160
agacccctgc tgtcgtcctt atgccgctct gcgggctttg gtggtggtgg gccaggtttg   2220
agcttccacc actgtcttat tccttcagag agagtgtcct cgagccaatc tggaagataa   2280
ccatcggcag ccataccctga tttaaatcat ttattgttca gagatgcagt catccaaatc   2340
cacattgacc agatcgcaag cagtgcaagc gtctggcacc tttcccatga tatgatgaat   2400
gtagcacagt ttctgatacg cctttttgac gacagaaacg ggttgagatt ctgacacggg   2460
aaagcactct aaacagtctt tctgtccgtg agtgaagcag atatttgaat tctgattcat   2520
tctctcgcat tgtctgcagg gaaacagcat cagattcatg cccacgtgac gagaacattt   2580
gttttggtac ctgtccgcgt agttgattga agcttccgcg tctgacgtcg atggctgcgc   2640
aactgactcg cgcgcccgtt tgggctcact tatatctgcg tcactggggg cgggtctttt   2700
tttggctcca cccttttttga cgtagaattc atgctctacc tcaaccacgt gatcctttgc   2760
ccaccggaaa aagtctttga cttcctgctt ggtgaccttc ccaaagtcat gatccagacg   2820
gcgggtgagt tcaaatttga acatccggtc ttgcaacggc tgctggtgtt cgaaggtcgt   2880
tgagttcccg tcaatcactg cgcacatgtt ggtgttggag gtgacaatca cgggagtcgg   2940
gtctatctgg gccgaggact tgcatttctg gtccacgcgc accttgcttc ctccgagaat   3000
ggctttggcc gactccacga ccttggcggt catcttcccc tcctcccacc agatcaccat   3060
cttgtcgacg caatcattga aaggaaagtt ctcattggtc cagttgacgc agccgtagaa   3120
agggcgaatt cgtttaaacc tgcaggacta gtcccttttag tgagggt             3167
```

```
<210>   172
<211>   3161
<212>   DNA
<213>   new AAV serotype, clone hu 172.2

<400>   172
aattgaattt agcggccgcg aattcgccct tcgcagagac caaagttcaa ctgaaacgaa     60
ttaaacggtt tattgattaa caagcaatta cagattacga gtcaggtatc tggtgccaat    120
ggggcgaggc tctgaataca caccattagt gtccacagta aagtccacat taacagattt    180
gttgtagttg gaagtgtact gaatctcggg attccagcgt ttgctgttct ccttctgcag    240
ctcccactcg atctccacgc tgacctgccc cgtggagtac tgtgtaatga aggaagcaaa    300
cttttgccgca ctgaaggtag tcgaaggatt cgcaggtacc ggggtgttct tgatgagaat    360
ctgcgggga gggtgtttaa gtccgaatcc gcccatgagg ggagaggggt gaaaatgtcc    420
gtccgtgtgt ggaatctttg cccagatggg cccctgcagg tacacgtctc tgtcctgcca    480
caccatgcct ggaagaacgc cttgtgtgtt gacatctgag gtagctgctt gtgtgttgcc    540
gctctggagg ttggtagata cagaaccata ctgctccgta gccacgggat tggtggtcct    600
gatttcctct tcgtctgtaa tcatgacctt ttcaatgtcc acattagttt ttcccgagtc    660
ttgttttcca aagatgagaa ccccgctctg aggaaaaaac ttttcttcat cgtccttgtg    720
gctggccatg gccgggcccg gattcaccag agagctcttt ccattaaggt ggtacttggt    780
agctccagtc cacgagtatt cactgttgtt gttatccgca gatgtctttg atactcgctg    840
```

Page 256

```
"ctgcggtaa cagggtccag gaagccagtt cctagactgg tcccgaatgt cacttgctcc    900

ggcctgagaa aactgaagcc ttgactgcgt ggtggttccg cttggagtgt ttgttctgct    960

caagtaatac aggtactggt cgacgagagg attcatgaga cggtccaaac tctggctgtg   1020

ggcgtagctg ctgtggaaag gaacgtcctc aaaggtgtag ctgaaggtaa agttgtttcc   1080

ggtacgcagc atctgagaag gaaagtactc caggcagtaa aatgaagagc gtcctactgc   1140

ctgactcccg ttgttcaggg tgaggtatcc atactgtggc accatgaaga cgtctgctgg   1200

gaacggcggg aggcatcctt gatgcgccga gccgaggacg tacgggagct ggtactccga   1260

gtcagtaaac acctgaaccg tgctggtaag gttattggca atcgtcgtcg taccgtcatt   1320

ctgcgtgacc tccttgactt gaatgttaaa gagcttgaag ttgagtcttt tgggccggga   1380

tccccaattg ttgttgatga gtctttgcca gtcacgtggc gaaaagtggc agtggaatct   1440

gttgaagtca aaataccccc aaggggtgct gtagccaaag tagtggttgt cgtttgaggc   1500

tcctgattgg ctggaaatct gcctgtagag gtggttgttg taggtgggca gagcccaggt   1560

gcgggtgctg gtggtgatga ctctgtcgcc catccatgtg gaatcgcaat gccaatttcc   1620

cgaggaatta cccactccgt cggcgccctc gttattgtct gccattggtg cgccactgcc   1680

tgtagccatc gtattagttc ccagaccaga gggggctgct ggtggctgtc cgagaggctg   1740

ggggtcaggt acggagtctg cgtctccagt ctgaccgaaa ttcaatctcc ttcttgcagg   1800

ctgctggccc gcttttccgg ttcccgagga ggagtctggc tccgcaagag agtgctctac   1860

cggcctcttt tttcccggag ccgtcttaac aggttcctca accaggccca gaggttcaag   1920

aaccctcttt ttcgcctgga agactgctcg tccgaggttg cccccaaaag acgtatcttc   1980

tttaagacgc tcctggaact ccgcgtcggc gtggttgtac ttgaggtacg ggttgtctcc   2040

gccgtcgagc tgccggtcgt aggccttgtc gtgctcgagg gccgcggcgt ctgcctcgtt   2100

gaccggctct cccttgtcga gtccgttgaa gggtccaagg tacttgtacc caggaagcac   2160

aagacccctg ctgtcgtcct tatgccgctc tgcgggcttt ggtggtggtg ggccaggttt   2220

gagcttccac cactgtctta ttccttcaga gagagtgtcc tcgagccaat ctggaagata   2280

accatcggca gccatacctg atttaaatca tttattgttc agagatgcag tcatccaaat   2340

ccacattgac cagatcgcaa gcagtgcaag cgtctggcac ctttcccatg atatgatgaa   2400

tgtagcacag tttctgatac gcctttttga cgacagaaac gggttgagat tctgacacgg   2460

gaaagcactc taaacagtct ttctgtccgt gagtgaagca gatatttgaa ttctgattca   2520

ttctctcgca ttgtctgcag ggaaacagca tcagattcat gcccacgtga cgagaacatt   2580

tgttttggta cctgtccgcg tagttgattg aagcttccgc gtctgacgtc gatggctgcg   2640

caactgactc gcgcgcccgt ttgggctcac ttatatctgc gtcactgggg gcgggtcttt   2700

ttttggctcc accctttttg acgtagaatt catgctctac ctcaaccacg tgatcctttg   2760

cccaccggaa aaagtctttg acttcctgct tggtgacctt cccaaagtca tgatccagac   2820

ggcgggtgag ttcaaatttg aacatccggt cttgcaacgg ctgctggtgt tcgaaggtcg   2880

ttgagttccc gtcaatcact gcgcacatgt tggtgttgga ggtgacaatc acgggagtcg   2940

ggtctatctg ggccgaggac ttgcatttct ggtccacgcg caccttgctt cctccgagaa   3000

tggctttggc cgactccacg accttggcgg tcatcttccc ctcctcccac cagatcacca   3060

tcttgtcgac gcaatcattg aaaggaaagt tctcattggt ccagttgacg cagcaagggc   3120

gaattcgttt aaacctgcag gactagtccc tttagtgagg g                        3161
```

```
<210>  173
<211>  3172
<212>  DNA
<213>  new AAV serotype, clone hu 173.4

<400>  173
gattgaattt agcggccgcg aattcgccct tgctgcgtca actggaccaa tgagaacttt     60

cccttcaacg attgcgtcga caagatggtg atctggtggg aggagggcaa gatgaccgcc    120

aaggtcgtgg agtccgccaa ggccattctg ggtggaagca aggtgcgcgt ggaccaaaag    180
```

```
tgcaagtcat cggcccagat cgaccccacg cccgtgatcg tcacctccaa caccaacatg    240
tgcgccgtga tcgacgggaa cagcaccacc ttcgagcacc agcagcccct gcaggaccgc    300
atgttcaagt tcgagctcac ccgccgtctg gagcacgact ttggcaaggt gaccaagcag    360
gaagtcaaag agttcttccg ctgggctcag gatcacgtga ctgaggtggc gcatgagttc    420
tacgtcagaa agggcggagc caccaaaaga cccgcccca gtgacgcgga tataagcgag    480
cccaagcggg cctgcccctc agttgcggag ccatcgacgt cagacgcgga agcaccggtg    540
gactttgcgg acaggtacca aaacaaatgt tctcgtcacg cgggcatgct tcagatgctg    600
tttccctgca agacatgcga gagaatgaat cagaatttca cgtctgcttt cacgcacggg    660
gtcagagact gctcagagtg cttcccccggc gcgtcggaat ctcaacccgt cgtcagaaaa    720
aagacgtatc agaaactgtg cgcgattcat catctgctgg ggcgggcacc cgagattgcg    780
tgttcggcct gcgatctcgt caacgtggac ttggatgact gtgtttctga gcaataaatg    840
acttaaacca ggtatggctg ctgacggtta tcttccagat tggctcgagg acaacctctc    900
tgagggcatt cgcgagtggt gggacctgaa acctggagcc cccaagccca aggccaacca    960
gcagaagcag gacgacggcc ggggtctggt gcttcctggc tacaagtacc tcggacccctt   1020
caacggactc gacaagggg agcccgtcaa cgcggcggac gcagcggccc tcgagcacga   1080
caaggcctac gaccagcagc tcaaagcggg tgacaatccg tacctgcggt ataaccacgc   1140
cgacgccgag tttcaggagc gtctgcaaga agatacgtct tttgggggca acctcgggcg   1200
agcagtcttc caggccaaga agcgggttct cgaacctctc ggtctggttg aggaagctgc   1260
taagacggct cctggaaaga agagaccggt agaaccgtca cctcagcgtt cccccgactc   1320
ctccgcgggc atcggcaaga aaggccagca gcccgctaaa aagagactga actttggtca   1380
gactggcgac tcagagtcag tccccgaccc tcaaccaatc ggagaaccac cagcaggccc   1440
ctctggtctg ggatctggta caatggctgc aggcggtggc gctccaatgg cagacaataa   1500
cgaaggcgcc gacggagtgg gtagttcctc aggaaattgg cattgcgatt ccacatggct   1560
gggcgacaga gtcatcacca ccagcacccg aacctgggcc ctgccccacct acaacaacca   1620
cctctacaag caaatatcca atgggacatc gggaggaagc accaacgaca cacctactt    1680
cggctacagc accccctggg ggtattttga cttcaacaga ttccactgcc acttctcacc   1740
acgtgactgg cagcgactca tcaacaacaa ctggggattc cggccaaaaa gactcagctt    1800
caagctcttc aacatccagg tcaaggaggt cacgcagaat gaaggcaccg agaccatcgc   1860
caataacctt accagcacga ttcaggtatt tacggactcg aataccagc tgccgtacgt   1920
cctcggctcc gcgcaccagg gctgcctgcc tccgttcccg cggacgtctt catgattcc    1980
ccagtacggc taccttacac tgaacaatgg aagtcaagcc gtaggccgtt cctccttcta   2040
ctgcctggaa tattttccat ctcaaatgct gcgaactgga aacaattttg aattcagcta   2100
caccttcgag gacgtgcctt ccacagcag ctgcgcacac agccagagct cggaccgact   2160
gatgaatcct ctcatcgacc agtacctgta ctacttatcc agaactcggt ccacaggagg   2220
aactcaaggt acccagcaat tgttattttc tcaagctggg cctgcaaaca tgtcggctca   2280
ggctaagaac tggctacctg accttgcta ccggcagcag cgagtctcta cgacactgtc   2340
gcaaaacaac aacagcaact ttgcttggac tggtgccacc aaatatcacc tgaacggaag   2400
agactctttg gtaaatcccg gtgtcgccat ggcaacccac aaggacgacg aggaacgctt   2460
cttcccgtcg agtggagtcc tgatgtttgg aaaacagggt gctggaagag acaatgtgga   2520
ctacagcagc gttatgctaa ccagcgaaga agaaattaaa accactaacc ctgtagccac   2580
agaacaatac ggtgtggtgg ctgacaactt gcagcaaacc aatacagggc ctattgtggg   2640
aaatgtcaac agccaaggag ccttacctgg catggtctgg cagaaccgag acgtgtacct   2700
gcagggtccc atctgggcca agattcctca cacggacggc aacttccacc cttcaccgct   2760
aatgggagga tttggactga agcacccacc tcctcagatc ctgatcaaga cacgccggt   2820
acctgcggat cctccaacaa cgttcagcca ggcgaaattg gcttccttca ttacgcagta   2880
cagcaccgga caggtcagcg tggaaatcga gtgggagctg cagaaggaga acagcaaacg   2940
```

```
ctggaaccca gagattcagt acacttcaaa ctactacaaa tctacaaatg tggactttgc     3000

tgtcaataca gagggaactt attctgagcc tcgccccatt ggtactcgtt acctcacccg     3060

taatctgtaa ttgctggtta atcaataaac cgtttgattc gtttcagttg aactttggtc     3120

tctgcgaagg gcgaattcgt ttaaacctgc aggactagtc cctttagtga gg            3172
```

<210> 174
<211> 3159
<212> DNA
<213> new AAV serotype, clone hu 161.8

<400> 174
```
gattgaattt agcggccgcg aattcgccct tgctgcgtca actggaccaa tgagaacttt       60

cctttcaatg attgcgtcga caagatggtg atctggtggg aggagggaaa gatgaccgcc      120

aaggtcgtgg agtcggccaa agccattctc ggaggaagca aggtgcgcgt ggaccagaaa      180

tgcaagtcct cggcccagat agacccgact cccgtgattg tcacctccaa caccgacatg      240

tgcgccgtga ttgacgggaa ctcaacgacc ttcgaacacc agcagccgtt gcaagaccgg      300

atgttcaaat ttgaactcac ccgccgtctg gatcatgact ttgggaaggt caccaagcag      360

gaagtcaaag actttttccg gtgggcaaag gatcacgtgg ttgaggtgga gcatgaattc      420

tacgtcaaaa agggtggagc taagaaaaga cccgccccca gtgacgcaga tataagtgag      480

cccaaacggg cgcgcgagtc agttgcgcag ccatcgacgt cagacgcgga agcttcgatc      540

aactacgcgg acaggtacca aaacaaatgt tctcgtcacg tgggcatgaa tctgatgctg      600

tttcccctgca gacaatgcga gagaatgaat cagaattcaa atatctgctt cactcacgga      660

cagaaagact gtttagagtg ctttcccgtg tcagaatctc aacccgtttc tgtcgtcaaa      720

aaggcgtatc agaaactttg ctacattcat catatcatgg gaaaggtgcc agacgcttgc      780

actgcctgcg atctggtcaa tgtggatttg gatgactgca tctctgaaca ataaatgatt      840

taaatcaggt atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga      900

aggaataaga cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg      960

gcataaggac gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa     1020

cggactcgac aaggggggagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa     1080

ggcctacgac cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga     1140

cgcggagttt caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc     1200

agtcttccag gcaaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa     1260

aacggctccg ggaaaaaaga ggccggtaga gcaccctcct gtggagccag actcctcctc     1320

gggaaccgga aaagcgggcc agcagcctgc aagaaaaaga ttgaatttcg gtcagactgg     1380

agacgcagac tccgtacctg acccccagcc tctcggacag ccaccagcag ccccctctgg     1440

tctgggatct actacaatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg     1500

tgccgatgga gtgggtaatt cctcgggaaa ttggcattgc gattcccaat ggctgggcga     1560

cagagtcatc accaccagca cccgcacctg ggccctgccc acctacaaca accacctcta     1620

caagcaaatc tccagccaat caggagcctc aaacgacaac cactactttg ctacagcac     1680

cccctggggg tattttgact tcaacagatt ccactgccac tttttcaccac gtgactggca     1740

aagactcatc aacaacaact ggggattccg acccaagaga ctcaacttca gctctttaa     1800

cattcaagtc aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac     1860

cagcacggtt caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc     1920

gcatcaagga tgcctcccgc cgtttccagc ggacgtcttc atggtcccac agtatggata     1980

cctcaccctg aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta     2040

ctttccttct cagatgctgc gtaccggaaa caactttcag ttcagctaca cttttgaaga     2100

cgtgcctttc cacagcagct acgctcacag ccagagtctg gatcggctga tgaatcctct     2160

gatcgaccag tacctgtatt atctgaacaa gacacaaaca aatagtggaa ctcttcagca     2220

gtctcggcta ctgtttagcc aagctggacc caccaacatg tctcttcaag ctaaaaaccg     2280
```

```
gctgcctgga ccttgctaca gacagcagcg tctgtcaaag caggcaaacg acaacaacaa   2340

cagcaacttt ccctggaccg cagctacaaa gtatcatcta aatggccggg actcgttggt   2400

taatccagga ccagctatgg ccagtcacaa ggatgacgaa gaaaagtttt tccccatgca   2460

tggaaccctt atatttggta aacaaggaac aaatgccaac gacgcggatt tggaaaatgt   2520

catgattaca gatgaagaag aaatcaggac caccaatccc gtggctacgg agcagtacgg   2580

aactgtatca aataatttgc aaaactcaaa cactggtcca actactggaa ctgtcaatca   2640

ccaaggagcg ttacctggta tggtgtggca ggatcgagac gtgtacctgc agggacccat   2700

ttgggccaag attcctcaca ccgatggaca ctttcatcct tctccactgg tgggaggttt   2760

tggactcaaa cacccacctc ctcaaatcat gatcaaaaac actcccgttc cagccaatcc   2820

tcccacaaac ttcagttctg ccaagtttgc ttctttcatc acacagtatt ccacggggca   2880

ggtcagcgtg gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga   2940

aattcagtac acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa   3000

tggtgtgtat tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaatt   3060

gcttgttaat caataaaccg tttaattcgt ttcagttgaa ctttggtctc tgcgaagggc   3120

gaattcgttt aaacctgcag gactagtccc tttagtgag                          3159
```

<210> 175
<211> 3172
<212> DNA
<213> new AAV serotype, clone hu 173.8

<400> 175
```
gattgaattt agcggccgcg aattcgccct tgctgcgtca actggaccaa tgagaacttt    60

cccttcaacg attgcgtcga caagatggtg atctggtggg aggagggcaa gatgaccgcc   120

aaggtcgtgg agtccgccaa ggccattctg ggtggaagca aggtgcgcgt ggaccaaaag   180

tgcaagtcat cggcccagat cgaccccacg cccgtgatcg tcacctccaa caccaacatg   240

tgcgccgtga tcggcgggaa cagcaccacc ttcgagcacc agcagcccct gcaggaccgc   300

atgttcaagt tcgagctcac ccgccgtctg gagcacgact ttggcaaggt gaccaagcag   360

gaagtcaaag agttcttccg ctgggctcag gatcacgtga ctgaggtggc gcatgagttc   420

tacgtcagaa agggcggagc caccaaaaga cccgccccca gtgacgcgga tataagcgag   480

cccaagcggg cctgcccctc agttgcggag ccatcgacgt cagacgcgga agcaccggtg   540

gactttgcgg acaggtacca aaacaaatgt tctcgtcacg cgggcatgct tcagatgctg   600

tttccctgca agacatgcga gagaatgaat cagaatttca cgtctgctt cacgcacggg    660

gtcagagact gctcagagtg cctccccggc gcgtcagaat ctcaacccgt cgtcagaaaa   720

aagacgtatc agaaactgtg cgcgattcat catctgctgg ggcgggcacc cgagattgcg   780

tgttcggcct gcgatctcgt caacgtggac ttggatgact gtgtttctga gcaataaatg   840

acttaaacca ggtatggctg ctgacggtta tcttccagat tggctcgagg acaacctctc   900

tgagggcatt cgcgagtggt gggacctgaa acctggagcc cccaagccca aggccaacca   960

gcagaagcag gacgacggcc ggggtctggt gcttcttggc tacaagtacc tcggacccct  1020

caacggactc gacaagggtg agcccgtcaa tgcggcggac gcagcggccc tcgagcacga  1080

caaggcctac gaccagcagc tcaaagcggg tgacaatccg tacctgcggt ataaccacgc  1140

cgacgccgag tttcaggagc gtctgcaaga agatacgtct tttgggggca acctcgggcg  1200

agcagtcttc caggccaaga gcgggttct cgaacctctc ggtctggttg aggaagctgc   1260

taagacggct cctggaaaga gagaccggt agaaccgtca cctcagcgtt cccccgactc    1320

ctccacgggc atcggcaaga aaggccagca gcccgctaaa aagagactga actttggtca  1380

gactggcgac tcagagtcag tccccgaccc tcaaccaatc ggagaaccac agcagggccc  1440

ctctggtctg ggatctggta caatggctgc aggcggtggc gctccaatgg cagacaataa  1500

cgaaggcgcc gacgagtggg gtagttcctc aggaaattgg cattgcgatt ccacatggct  1560

gggcgacaga gtcatcacca ccagcacccg aacctgggcc ctgcccacct acaacaacca  1620
```

Page 260

```
cctctacaag caaatatcca atgggacatc gggaggaagc accaacgaca acacctactt   1680
cggctacagc accccctggg ggtattttga cttcaacaga ttccactgcc acttctcacc   1740
acgtgactgg cagcgactca tcaacaacaa ctgggggattc cggccaaaaa gactcagctt   1800
caagctcttc aacatccagg tcaaggaggt cacgcagaat gaaggcacca agaccatcgc   1860
caataacctt accagcacga ttcaggtatt tacggactcg gaataccagc tgccgtacgt   1920
cctcggctcc gcgcaccagg gctgcctgcc tccgttcccg gcggacgtct tcatgattcc   1980
ccagtacggc taccttacac tgaacaatgg aagtcaagcc gtaggccgtt cctccttcta   2040
ctgcctggaa tattttccat ctcaaatgct gcgaactgga aacaattttg aattcagcta   2100
caccttcgag gacgtgcctt ccacagcgg ctacgcacac agccagagct tggaccgact   2160
gatgaatcct ctcatcgacc agtacctgta ctacttatcc agaactcagt ccacaggagg   2220
aactcaaggt acccagcaat tgttattttc tcaagctggg cctgcaaaca tgtcggctca   2280
ggctaagaac tggctacctg gaccttgcta ccggcagcag cgagtctcta cgacactgtc   2340
gcaaaacaac aacagcaact ttgcttggac tggtgccacc aaatatcacc tgaacggaag   2400
agactctttg gtaaatcccg gtgtcgccat ggcaacccac aaggacgacg aggaacgctt   2460
cttcccgtcg agtggagtcc tgatgtttgg aaaacagggt gctggaagag acaatgtgga   2520
ctacagcagc gttatgctaa ccagcgaaga agaaattaaa accactaacc ctgtagccac   2580
agaacaatac ggtgtggtgg ctgacaactt gcagcaaacc aatacagggc ctattgtggg   2640
aaatgtcaac agccaaggag ccttacctgg catggtctgg cagaaccgag acgtgtacct   2700
gcagggtccc atctgggcca agattcctca cacggacggc aacttccacc cttcaccgct   2760
aatgggagga tttggactga agcacccacc tcctcagatc ctgatcaaga cacgccggt   2820
acctgcggat cctccaacga cgttcagcca ggcgaaattg gcttccttca ttacgcagta   2880
cagcaccgga caggtcagcg tggaaatcga gtgggagctg cagaaggaga cagcaaacg   2940
ctggaaccca gagattcagt acacttcaaa ctactacaaa tctacaaatg tggactttgc   3000
tgtcaataca gagggaactt attctgagcc tcgccccatt ggtactcgtt acctcacccg   3060
taatctgtaa ttgctggtta atcaataaac cgtttgattc gtttcagttg aactttggtc   3120
tctgcgaagg gcgaattcgt ttaaacctgc aggactagtc cctttagtga gg          3172
```

```
<210>   176
<211>   3160
<212>   DNA
<213>   new AAV serotype, clone hu 145.1

<400>   176
```

```
acccttcact aaagggacta gtcctgcagg tttaaacgaa ttcgcccttg ctgcgtcaac    60
tggaccaatg agaactttcc cttcaacgac tgtgtcgaca agatggtgat ttggtgggag   120
gaggggaaga tgaccgccaa ggtcgtggag tcggccaaag ccattctcgg aggaagcaag   180
gtgcgcgtgg accagaaatg caagtcctcg gcccagatag atccgactcc cgtgatcgtc   240
acctccaaca ccaacatgtg cgccgtgatt gacgggaact caacgacctt cgaacaccag   300
cagccgttgc aagaccggat gttcaaattt gaactcaccc gccgtctgga tcatgacttt   360
gggaaggtca ccaagcggga agtcaaagac ttttccggt gggcaaagga tcacgtggtt   420
gaggtggagc atgaattcta cgtcaaaaag ggtggagcca agaaaagacc cgcccctagt   480
gacgcagata taagtgagcc caaacgggtg cgcgagtcag ttgcgcagcc atcgacgtca   540
gacgcggaag cttcgatcaa ctacgcggac aggtaccaaa acaaatgttc tcgtcacgtg   600
ggcatgaatc tgatgctgtt tccctgcaga caatgcgaga gaatgaatca aaattcaaat   660
atctgcttca ctcacggaca gaaagactgt ttagagtgct ttcccgtgtc agaatctcaa   720
cctgtttctg tcgtcaaaaa ggcgtatcag aaactgtgct acattcatca tatcatggga   780
aaggtgccag acgcttgcac tgcctgcgat ctggtcaatg tggatttgga tgactgcatc   840
tctgaacaat aaatgattta aatcaggtat ggctgccgat ggttatcttc cagattggct   900
cgaggacact ctctctgaag gaataagaca gtggtggaag ctcaaacctg gcccaccacc   960
```

```
accaaagccc gcagagcggc ataaggacga cagcaggggt cttgtgcttc ctgggtacaa     1020
gtacctcgga cccttcaacg gactcgacaa gggagagccg gtcaacgagg cagacgccgc     1080
ggccctcgag cacgacaagg cctacgaccg gcagctcgac agcggagaca accgtacct      1140
caagtacaac cacgccgacg cggagtttca ggagcgtctt aaagaagata cgtcttttgg     1200
gggcaacctc ggacgagcag tcttccaggc gaaaaagagg gttcttgaac ctctgggcct     1260
ggttgaggaa cctgttaaga cggctccggg aaaaaagagg ccggtagagc actctcctgc     1320
ggagccagac tcctcctcgg gaaccggaaa agcgggccag cagcctgcaa gaaaaagact     1380
gaatttcggt cagactggag acgcagactc cgtacctgac ccccagcctc tcagacagcc     1440
accagcagcc cccacaagtt tgggatctac tacaatggct acaggcagtg gcgcaccaat     1500
ggcagacaat aacgagggtg ccgatggagt gggtaattcc tcaggaaatt ggcattgcga     1560
ttcccaatgg ctgggcgaca gagtcatcac caccagcacc cgaacctggg ccctgcccac     1620
ctacaacaac cacctttaca agcaaatctc cagccaatca ggagcctcaa acgacaacca     1680
ctactttggc tacagcaccc cctgggggta ttttgacttc aacagattcc actgccactt     1740
ttcaccacgt gactggcaaa gactcatcaa caacaactgg ggattccgac ccaagagact     1800
caacttcaag ctctttaaca ttcaagtcaa agaggtcacg cagaatgacg gtacgacgac     1860
gattgccaat aaccttacca gcacggttca ggtgtttact gactcggagt accagctccc     1920
gtacgtcctc ggctcggcgc atcaaggatg cctcccgccg tttccagcgg acgtcttcat     1980
ggtcccacag tatggatacc tcaccctgaa caacgggagt caggcggtag gacgctcttc     2040
cttttactgc ctggagtact ttccttctca gatgctgcgt actgaaaca actttcagtt      2100
cagctacact tttgaagacg tgcctttcca cagcagctac gctcacagcc agagtttgga     2160
tcggctgatg aatcctctga tcgaccagta cctgtattat ctaaacagaa cacaaacagc     2220
tagtggaact cagcagtctc ggctactgtt tagccaagct ggacccacaa gcatgtctct     2280
tcaagctaaa aactggctgc ctggaccgtg ttatcgccag cagcgtttgt caaagcaggc     2340
aaacgacaac aacaacagca actttccctg gactggagct accaagtact acctcaatgg     2400
cagagactct ttggtgaacc cgggcccggc catggccagc cacaaggacg atgaagaaaa     2460
gtttttcccc atgcatggaa ccctaatatt tggtaaagaa ggaacaaatg ctaccaacgc     2520
ggaattggaa aatgtcatga ttacagatga agaggaaatc aggaccacca tcccgtggc      2580
tacagagcag tacggatatg tgtcaaataa tttgcaaaac tcaaatactg ctgcaagtac     2640
tgaaactgtg aatcaccaag gagcattacc tggtatggtg tggcaggatc gagacgtgta     2700
cctgcaggga cccatttggg ccaagattcc tcacaccgat ggacactttc atccttctcc     2760
actgatggga ggttttggac tcaaacaccc gcctcctcag attatgatca aaaacactcc     2820
cgttccagcc aatcctccca caaacttcag ttctgccaag tttgcttcct tcatcacaca     2880
gtattccacg ggacaggtca gcgtggagat cgagtgggag ctgcagaagg agaacagcaa     2940
acgctggaat cccgaaattc agtacacttc caactacaac aaatctgtta atgtggactt     3000
tactgtggac actaatggtg tgtattcaga gcctcgcccc attggcacca gatacctgac     3060
tcgtaatctg taattgcttg ttaatcaata aaccgtttaa ttcgtttcag ttgaactttg     3120
gtctctgcga agggcgaatt cgcggccgct aaatcaatcg                           3160
```

```
<210>    177
<211>    3157
<212>    DNA
<213>    new AAV serotype, clone hu 145.5

<400>    177
ctcactaagg gactagtcct gcaggtttaa acgaattcgc ccttgctgcg tcaactggac      60
caatgagaac tttcccttca acgactgtgt cgacaagatg gtgatttggt gggaggaggg     120
gaagatgacc gccaaggtcg tggagtcggc caaagccact ctcggaggaa gcaaggtgcg     180
cgtggaccag aaacgcaagt cctcggccca gatagatccg actcccgtga tcgtcacctc     240
caacaccaac atgtgcgccg tgattgacgg gaactcaacg accttcgaac accagcagcc     300
```

```
gttgcaagac cgaatgttca aatttgaact cacccgccgt ctggatcatg acttcgggaa    360
ggtcaccaag caggaagtca aagacttttt ccggtgggca aaggatcacg tggttgaggt    420
ggagcatgaa ttctacgtca aaaagggtgg agccaagaaa agacccgccc ctagtgacgc    480
agatataagt gagcccaaac gggtgcgcga gtcagttgcg cagccatcga cgtcagacgc    540
ggaagcttcg atcaactacg cggacaggta ccaaaacaaa tgttctcgtc acgtgggcat    600
gaatctgatg ctgtttccct gcagacaatg cgagagaatg aatcaaaatt caaatatctg    660
cttcactcac ggacagaaag actgtttaga gtgctttccc gtgtcagaat ctcaacctgt    720
ttctgtcgtc aaaaaggcgt atcagaaact gtgctacatt catcatatca tgggaaaggt    780
gccagacgct tgcactgcct gcgatctggt caatgtggat ttggatgact gcatctctga    840
acaataaatg atttaaatca ggtatggctg ccgatggtta tcttccagat tggctcgagg    900
acactctctc tgaaggaata agacagtggt ggaagctcaa acctggccca ccaccaccaa    960
agcccgcaga gcggcataag gacgacagca ggggtcttgt gcttcctggg tacaagtacc   1020
tcggaccctt caacggactc gacaagggag agccggtcaa cgaggcagac gccgcggctc   1080
tcgagcacga caaggcctac gaccggcagc tcgacagcgg agacaacccg tacctcaagt   1140
acaaccacgc cgacgcggag tttcaggagc gtcttaaaga agatacgtct tttgggggca   1200
acctcggacg agcagtcttc caggcgaaaa agagggttct tgaacctctg ggcctggttg   1260
aggaacctgt taagacggct ccgggaaaaa agaggccggt agagcactct cctgcggagc   1320
cagactcctc ctcgggaacc ggaaaagcgg gccagcagcc tgcaagaaaa agactgaatt   1380
tcggtcagac tggagacgca gactccgtac ctgacccca gcctctcgga cagccaccag   1440
cagcccccac aagtttggga tctactacaa tggctacagg cagtggcgca ccaatggcag   1500
acaataacga gggtgccgat ggagtgggta attcctcagg aaattggcat tgcgattccc   1560
aatggctggg cgacagagtc atcaccacca gcacccgaac ctgggccctg cccacctaca   1620
acaaccacct ttacaagcaa atctccagcc aatcaggagc ctcaaacgac aaccactact   1680
ttggctacag cacccctgg gggtattttg acttcaacag attccactgc cgcttttcac   1740
cacgtgactg gcaaagactc atcaacaaca actggggatt ccgacccaag agactcaact   1800
tcaagctctt taacattcaa gtcaaagagg tcacgcagaa tgacggtacg acgacgattg   1860
ccaataacct taccagcacg gttcaggtgt ttactgactc ggagtaccag ctcccgtacg   1920
tcctcggctc ggcgcatcaa ggatgcctcc cgccgtttcc agcggacgtc ttcatggtcc   1980
cacagtatgg atacctcacc ctgaacaacg ggagtcaggc ggtaggacgc tcttcctttt   2040
actgcctgga gtactttcct tctcagatgc tgcgtactgg aaacaacttt cagttcagct   2100
acacttttga agacgtgcct ttccacagca gctacgctca cagccaggst ttggatcggc   2160
tgatgaatcc tctgatcgac cagtacctgt attatctaaa cagaacacaa acagctagtg   2220
gaactcagca gtctcggcta ctgtttagcc aagctggacc cacaagcatg tctcttcaag   2280
ctaaaaactg gctgcctgga ccgtgttatc gccagcagcc tttgtcaaag caggcaaacg   2340
acaacaacaa cagcaacttt ccctggactg gagctaccaa gtaccacctc aatggcggag   2400
actctttggt gaacccgggc ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt   2460
tcccccatgca tggaacccta atatttggta agaaggaac aaatgctacc aacgcggaat   2520
tggaaaatgt catgattaca gatgaagagg aaatcaggac caccaatccc gtggctacag   2580
agcagtacgg atatgtgtca aataatttgc aaaactcaaa tactgctgca agtactgaaa   2640
ctgtgaatca ccaaggagca ttacctggta tggtgtggca ggatcgagac gtgtacctgc   2700
ggggacccat ttgggccaag attcctcacg ccgatggaca ctttcatcct tctccactga   2760
tgggaggttt tggactcaaa cacccgcctc ctcagattat gatcaaaaac actcccgttc   2820
cagccaatcc tcccacaaac ttcagttctg ccaagtttgc ttccttcatc acacagtatt   2880
ccacgggaca ggtcagcgtg gagatcgagt gggagctgca gaaggagaac agcaaacgct   2940
ggaatcccga aattcagtac acttccaact acaacaaatc tgttaatgtg gactttactg   3000
```

tggacactaa tggtgtgtat tcagagcctc gccccattgg caccagatac ctgactcgta   3060

atctgtaatt gcttgttaat caataaaccg tttaattcgt ttcagttgaa ctttggtctc   3120

tgcgaagggc gaattcgcgg ccgctaaatt caattcg   3157

<210> 178
<211> 3163
<212> DNA
<213> new AAV serotype, clone hu 145.6

<400> 178
accctcacta aagggactag tcctgcaggt ttaaacgaat tcgcccttgc tgcgtcaact   60

ggagcaatga gaactttccc ttcaacgact gtgtcgacaa gatggtgatt tggtgggagg   120

aggggaagat gaccgccaag gtcgtggagt cggccaaagc cattctcgga ggaagcaagg   180

tgcgcgtgga ccagaaatgc aagtcctcgg cccagataga tccgactccc gtgatcgtca   240

cctccaacac caacatgtgc gccgtgattg acgggaactc aacgaccttc gaacaccagc   300

agccgttgca agaccggatg ttcaaatttg aactcacccg ccgtctggat catgactttg   360

ggaaggtcac caagcaggaa gtcaaagact ttttccggtg ggcaaaggat cacgtggttg   420

aggtggagca tggattctac gtcaaaaagg gtggagccaa gaaaagaccc gcccctagtg   480

acgcagatat aagtgagccc aaacgggtgc gcgagtcagt tgcgcagcca tcgacgtcgg   540

acgcggaagc ttcgatcaac tacgcggaca ggtaccaaaa caaatgttct cgtcacgtgg   600

gcatgaatct gatgctgttt ccctgcagac aatgcgagag aatgaatcaa aattcaaata   660

tctgcttcac tcacggacag aaagactgtt tagagtgctt tcccgtgtca gaatctcaac   720

ctgtttctgt cgtcaaaaag gcgtatcaga aactgcgcta cattcatcat atcatgggaa   780

aggtgccaga cgcttgcact gcctgcgatc tggtcaatgt ggatttggat gactgcatct   840

ctgaacaata aatgatttaa atcaggtatg gctgccgatg gttatcttcc agattggctc   900

gaggacactc tctctgaagg aataagacag tggtggaagc tcaaacctgg cccaccacca   960

ccaaagcccg cagagcggca taaggacgac agcagggtc ttgtgcttcc tgggtacaag   1020

tacctcggac ccttcaacgg actcgacaag ggagagccgg tcaacgaggc agacgccgcg   1080

gccctcgagc acgacaaggc ctacgaccgg cagctcgaca gcggagacaa cccgtacctc   1140

aagtacaacc acgccgacgc ggagtttcag gagcgtctta agaagatac gtcttttggg   1200

ggcaacctcg gacgagcagt cttccaggcg aaaaagaggg ttcttgaacc tctgggcctg   1260

gttgaggaac ctgttaagac ggctccggga aaaaagaggc cggtagagca ctctcctgcg   1320

gagccagact cctcctcggg aaccggaaaa gcgggccagc agcctgcaag aaaaagactg   1380

aatttcggtc agactggaga cgcagactcc gtacctgacc cccagcctct cggacagcca   1440

ccagcagccc ccacaagttt gggatctact acaatggcta caggcagtgg cgcaccaatg   1500

gcagacaata cgagggtgc cgatggagtg ggtaattcct caggaaattg gcattgcgat   1560

tcccaatggc tgggcgacag agtcatcacc accagcaccc gaacctgggc cctgcccacc   1620

tacaacaacc acctttacaa gcaaatctcc agccaatcag gagcctcaaa cgacaaccac   1680

tactttggct acagcacccc ctggggatat tttgacttca acagattcca ctgccacttt   1740

tcaccacgtg actggcaaag actcatcaac aacaactggg gattccgacc caagagactc   1800

aacttcaagc tctttaacat tcaagtcaaa gaggtcacgc agaatgacgg tacgacgacg   1860

attgccaata accttaccag cacggttcag gtgtttactg actcggagta ccagctcccg   1920

tacgtcctcg gctcggcgca tcaaggatgc ctccccgccgt ttccagcgga cgtcttcatg   1980

gtcccacagt atggatacct caccctgaac aacgggagtc aggcggtagg acgctcttcc   2040

ttttactgcc tggagtgctt tccttctcag atgctgcgta ctggaaacaa ctttcagttc   2100

agctacactt ttgaagacgt gccttttccac agcagctacg ctcacagcca gagtttggat   2160

cggctgatga tcctctgat cgaccagtac ctgtattatc taaacagaac acaaacagct   2220

agtggaactc agcagtctcg gctactgttt agccaagctg acccacaag catgtctctt   2280

caagctaaaa actggctgcc tggaccgtgt tatcgccagc agcgtttgtc aaagcaggca   2340

```
aacgacaaca acaacagcaa ctttccctgg actggagcta ccaagtacca cctcaatggc   2400

agagactctt tggtgaaccc gggcccggcc atggccagcc acaaggacga tgaagaaaag   2460

tttttcccca tgcatggaac cctaatattt ggtaaagaag gaacaaatgc taccaacgcg   2520

gaattggaaa atgtcatgat tacagatgaa gaggaaatca ggaccaccaa tcccgtggct   2580

acagagcagt acggatatgt gtcaaataat ttgcaaaact caaatactgc tgcaagtact   2640

gaaactgtga atcaccaagg agcattacct ggtatggtgt ggcaggatcg agacgtgtac   2700

ctgcagggac ccatttgggc caagattcct cacaccgatg gacactttca tccttctcca   2760

ctgatgggag gttttggact caaacacccg cctcctcaga ttatgatcaa aaacactccc   2820

gttccagcca atcctcccac aaacttcagt tctgccaagt ttgcttcctt catcacacag   2880

tattccacgg gacaggtcag cgtggagatc gagtgggagc tgcagaagga gaacagcaaa   2940

cgctggaatc ccgaaattca gtacacttcc aactacaaca aatctgttaa tgtggacttt   3000

actgtggaca ctaatggtgt gtattcagag cctcgcccca ttggcaccag atacctgact   3060

cgtaatctgt aattgcttgt taatcaataa accgtttaat tcgtttcagt tgaactttgg   3120

tctctgcgaa gggcgaattc gcggccgcta aattcaattc gcc               3163
```

```
<210>  179
<211>  3161
<212>  DNA
<213>  new AAV serotype, clone hu 156.1

<400>  179
cgaattgatt tagcggccgc gaattcgccc ttcgcagaga ccaaagttca actgaaacga    60

attaaacggt ttattgatta acaagcaatt acagattacg agtcaggtat ctggtgccaa   120

tggggcgagg ctctgaatac acaccattag tgtccacagt aaagtccaca ttaacagatt   180

tgttgtagtt ggaagtgtac tggatctcgg gattccagcg tttgctgttc tccttctgta   240

gctcccactc gatctccacg ctgacccgcc ccgtggaata ctgtgtgatg aaggaagcaa   300

actttgccgc actgaaggtg gtcgaaggat tcgcaggtac cggggtgttt ttgatgagaa   360

tctgtggagg agggtgttta agtccgaatc cgcccatgag gggagagggg tgaaaatgtc   420

cgtccgtgtg cggaatcttt gcccagatag gcccctgcag gtacacgtct ctgtcctgcc   480

agaccatgcc tggaagaacg ccttgtgtgt tgacatctgc agtagatgct tgtgtgttgc   540

cgctctggag gttggtagat acagaaccat actgctccgt ggccacggga ttggtggttc   600

tgatttcctc ttcgtctgta atcatgacct tttcaatgtc cacatttgtt ttctctgatc   660

cttgttttcc aaagatgaga accccgctct gaggaaaaaa ctttтcttca tcgtccttgt   720

ggctggccat tgccgggccc ggattcacca gagagtctct gccattgagg tggtacttgg   780

tagctccaat ccacgagtat tcactgttgt tgttgtccgc agatgtcttt gatactcgct   840

gctggcggta acagggtcca ggaagccagt cctagactg atcccgaatg tcactcgctc   900

cggcctgaga aaactgaagc ctggactgcg tggtggttcc gcttggagtg tttgttctgc   960

tcaagtaata caggtactgg tcgatgagag gattcatgag acggtccaaa ctctggctgt   1020

gagcgtagct gctgtggaaa ggaacatcct caaaggtgta gctgaaggta aagttgtttc   1080

cggtacgcag catctgagaa gggaagtact ccaggcagta aaatgaagag cgtcctactg   1140

cctgactccc gttgttcagg gtgaggtatc catactgtgg caccatgaag acgtctgctg   1200

ggaacggcgg gaggcatcct tgatgcgccg agccgaggac gtacgggagc tggtactccg   1260

agtcagtaaa cacctgaacc gtgctggtaa ggttattggc aatcgtcgtc gtaccatcat   1320

tctgcgtgac ctctctgact tgaatgttaa agagcttgaa gttgagtctc ttgggccgga   1380

atccccagtt gttgttgatg agtctttgcc agtcacgtgg tgaaaagtgg cagtggaatc   1440

tgttgaagtc aaaatacccc caaggggtgc tgtagccaaa gtagtggttg tcgttgctgg   1500

ctcctgattg gctggaaatc tgcttgtaca gatggttgtt gtaggtgggg agagcccagg   1560

ttcgggtgct ggtggtgatg actctgtcgc ccatccatgt ggaatcgcaa tgccaatttc   1620

ccgaggaatt acccactccg tcggcgccat cgttattgtc tgccattggt gcgccactgc   1680
```

```
ctgtagccat cgtattagtt cccagaccag agggggctgc tggtggctgt ccgagaggct    1740

gggggtcagg tacggagtct gcgtctccag tctgaccgaa attcaatctc tttcttgcag    1800

gctggttgcc cgcttttccg gttcccgagg aggagtctgg ctccacagga gagtgctcta    1860

ccggcctctt ttttccccgga gccgtcttaa caggctcctc aaccaggccc agaggttcaa    1920

gaaccctctt ttttgcctgg aagactgctc gtccgaggtt gcccccaaaa gacgtatctt    1980

cttttaaggcg ctcctgaaac tccgcgtcgg cgtggtcgta cttgaggtac gggttgtctc    2040

cgctgtcgag ctgccggtcg taggccttgt cgtgctcgag ggccgcggcg tctgcctcgt    2100

tgaccggctc tcccttgtcg agtccgttga agggtccgag gtacttgtac ccaggaagca    2160

caagacccct gctgtcgtcc ttatgccgct ctgcgggctt tggtggtggt gggccaggtt    2220

tgagcttcca ccactgtctt attccttcag agagagtgtc ctcgagccaa tctggaagat    2280

aaccatcggc agccatacct gatttaaatc atttattgtt cagagatgca gtcatccaaa    2340

tccacattga ccagatcgca ggcagtgcaa gcgtctggca cctttcccat gatatgatga    2400

atgtagcaaa gtttctgata cgccttttg acgacagaaa cggggttgaga ttctgacacg    2460

ggaaagcact ctaaacagtc tttctgtccg tgagtgaagc agatatttga attctgattc    2520

attctctcgc attgtctgca gggaaacagc atcagattca tgcccacgtg acgagaacat    2580

ttgttttggt acctgtccgc gtagttgatc gaagcttccg cgtctgacgt cgatggctgc    2640

gcaactgact cgcgcgcccg tttgggctca cttatatctg cgtcactggg ggcgggtctt    2700

ttcttggctc cacccttttt gacgtagaat tcatgctcca cctcaaccac gtgatccttt    2760

gcccaccgga aaaagtcttt cacttcctgc ttggtgacct tcccaaagtc atgatccaga    2820

cggcgggtta gttcaaattt gaacatccgg tcttgcaacg gctgctggtg ttcgaaggtc    2880

gttgagttcc cgtcaatcac ggcgcacatg ttggtgttgg aggtggcgat cacgggagtc    2940

gggtctatct gggccgagga cttgcacttt tggtccacgc gcaccttgct tcctccgaga    3000

atggcttcgg ccgattccac gaccttggcg gtcatctttc cctcctccca ccagatcacc    3060

atcttgtcga cacagtcgtt gaagggaaag ttctcattgg tccagttgac gcagcaaggg    3120

cgaattcgtt taaacctgca ggaactagtc ccttagtgag g    3161
```

<210> 180
<211> 4721
<212> DNA
<213> adeno-associated virus serotype 7

<400> 180
```
ttggccactc cctctatgcg cgctcgctcg ctcggtgggg cctgcggacc aaaggtccgc      60

agacggcaga gctctgctct gccggcccca ccgagcgagc gagcgcgcat agagggagtg     120

gccaactcca tcactagggg taccgcgaag cgcctcccac gctgccgcgt cagcgctgac     180

gtaaatcacg tcataggggga gtggtcctgt attagctgtc acgtgagtgc ttttgcgaca     240

ttttgcgaca ccacgtggcc atttgaggta tatatggccg agtgagcgag caggatctcc     300

attttgaccg cgaaatttga acgagcagca gccatgccgg gtttctacga gatcgtgatc     360

aaggtgccga gcgacctgga cgagcacctg ccgggcattt ctgactcgtt tgtgaactgg     420

gtggccgaga aggaatggga gctgcccccg gattctgaca tggatctgaa tctgatcgag     480

caggcacccc tgaccgtggc cgagaagctg cagcgcgact tcctggtcca atggcgccgc     540

gtgagtaagg ccccggaggc cctgttcttt gttcagttcg agaagggcga gagctacttc     600

caccttcacg ttctggtgga gaccacgggg gtcaagtcca tggtgctagg ccgcttcctg     660

agtcagattc gggagaagct ggtccagacc atctaccgcg gggtcgagcc cacgctgccc     720

aactggttcg cggtgaccaa gacgcgtaat ggcgccggcg ggggaacaa ggtggtggac     780

gagtgctaca tccccaacta cctcctgccc aagacccagc ccgagctgca gtgggcgtgg     840

actaacatgg aggagtatat aagcgcgtgt ttgaacctgg ccgaacgcaa acggctcgtg     900

gcgcagcacc tgacccacgt cagccagacg caggagcaga acaaggagaa tctgaacccc     960

aattctgacg cgcccgtgat caggtcaaaa acctccgcgc gctacatgga gctggtcggg     1020
```

```
tggctggtgg accgggcat cacctccgag aagcagtgga tccaggagga ccaggcctcg   1080
tacatctcct tcaacgccgc ctccaactcg cggtcccaga tcaaggccgc gctggacaat   1140
gccggcaaga tcatggcgct gaccaaatcc gcgcccgact acctggtggg gccctcgctg   1200
cccgcggaca ttaaaaccaa ccgcatctac cgcatcctgg agctgaacgg gtacgatcct   1260
gcctacgccg gctccgtctt tctcggctgg gcccagaaaa agttcgggaa gcgcaacacc   1320
atctggctgt ttgggcccgc caccaccggc aagaccaaca ttgcggaagc catcgcccac   1380
gccgtgccct tctacggctg cgtcaactgg accaatgaga actttccctt caacgattgc   1440
gtcgacaaga tggtgatctg gtgggaggag ggcaagatga cggccaaggt cgtggagtcc   1500
gccaaggcca ttctcggcgg cagcaaggtg cgcgtggacc aaaagtgcaa gtcgtccgcc   1560
cagatcgacc ccacccccgt gatcgtcacc tccaacacca acatgtgcgc cgtgattgac   1620
gggaacagca ccaccttcga gcaccagcag ccgttgcagg accggatgtt caaatttgaa   1680
ctcacccgcc gtctggagca cgactttggc aaggtgacga agcaggaagt caaagagttc   1740
ttccgctggg ccagtgatca cgtgaccgag gtggcgcatg agttctacgt cagaaagggc   1800
ggagccagca aaagacccgc ccccgatgac gcggatataa gcgagcccaa gcgggcctgc   1860
ccctcagtcg cggatccatc gacgtcagac gcggaaggag ctccggtgga ctttgccgac   1920
aggtaccaaa acaaatgttc tcgtcacgcg ggcatgattc agatgctgtt tccctgcaaa   1980
acgtgcgaga gaatgaatca gaatttcaac atttgcttca cacacgggt cagagactgt   · 2040
ttagagtgtt tccccggcgt gtcagaatct caaccggtcg tcagaaaaaa gacgtatcgg   2100
aaactctgcg cgattcatca tctgctgggg cgggcgcccg agattgcttg ctcggcctgc   2160
·gacctggtca acgtggacct ggacgactgc gtttctgagc aataaatgac ttaaaccagg   2220
tatggctgcc gatggttatc ttccagattg gctcgaggac aacctctctg agggcattcg   2280
cgagtggtgg gacctgaaac ctggagcccc gaaacccaaa gccaaccagc aaaagcagga   2340
caacggccgg ggtctggtgc ttcctggcta caagtacctc ggacccttca cggactcga   2400
caaggggggag cccgtcaacg cggcggacgc agcggccctc gagcacgaca aggcctacga   2460
ccagcagctc aaagcgggtg acaatccgta cctgcggtat aaccacgccg acgccgagtt   2520
tcaggagcgt ctgcaagaag atacgtcatt tggggggcaac ctcgggcgag cagtcttcca   2580
ggccaagaag cgggttctcg aacctctcgg tctggttgag gaaggcgcta agacggctcc   2640
tgcaaagaag agaccggtag agccgtcacc tcagcgttcc cccgactcct ccacgggcat   2700
cggcaagaaa ggccagcagc ccgccagaaa gagactcaat ttcggtcaga ctggcgactc   2760
agagtcagtc cccgaccctc aacctctcgg agaacctcca gcagcgccct ctagtgtggg   2820
atctggtaca gtggctgcag gcggtggcgc accaatggca gacaataacg aaggtgccga   2880
cggagtgggt aatgcctcag gaaattggca ttgcgattcc acatggctgg gcgacagagt   2940
cattaccacc agcacccgaa cctgggccct gcccacctac aacaaccacc tctacaagca   3000
aatctccagt gaaactgcag gtagtaccaa cgacaacacc tacttcggct acagcacccc   3060
ctggggggtat tttgactta acagattcca ctgccacttc tcaccacgtg actggcagcg   3120
actcatcaac aacaactggg gattccggcc caagaagctg cggttcaagc tcttcaacat   3180
ccaggtcaag gaggtcacga cgaatgacgg cgttacgacc atcgctaata accttaccag   3240
cacgattcag gtattctcgg actcggaata ccagctgccg tacgtcctcg gctctgcgca   3300
ccaggggctgc ctgcctccgt tcccggcgga cgtcttcatg attcctcagt acggctacct   3360
gactctcaac aatggcagtc agtctgtggg acgttcctcc ttctactgcc tggagtactt   3420
cccctctcag atgctgagaa cgggcaacaa ctttgagttc agctacagct tcgaggacgt   3480
gcctttccac agcagctacg cacacagcca gagcctggac cggctgatga atcccctcat   3540
cgaccagtac ttgtactacc tggccagaac acagagtaac ccaggaggca cagctggcaa   3600
tcgggaactg cagtttttacc agggcgggcc ttcaactatg gccgacaag ccaagaattg   3660
gttacctgga ccttgcttcc ggcaacaaag agtctccaaa cgctggatc aaaacaacaa   3720
cagcaacttt gcttggactg gtgccaccaa atatcacctg aacggcagaa actcgttggt   3780
```

```
taatcccggc gtcgccatgg caactcacaa ggacgacgag gaccgctttt tcccatccag    3840
cggagtcctg atttttggaa aaactggagc aactaacaaa actacattgg aaaatgtgtt    3900
aatgacaaat gaagaagaaa ttcgtcctac taatcctgta gccacggaag aatacgggat    3960
agtcagcagc aacttacaag cggctaatac tgcagcccag acacaagttg tcaacaacca    4020
gggagcctta cctggcatgg tctggcagaa ccgggacgtg tacctgcagg gtcccatctg    4080
ggccaagatt cctcacacgg atggcaactt tcacccgtct cctttgatgg gcggctttgg    4140
acttaaacat ccgcctcctc agatcctgat caagaacact cccgttcccg ctaatcctcc    4200
ggaggtgttt actcctgcca gtttgcttc gttcatcaca cagtacagca ccggacaagt    4260
cagcgtggaa atcgagtggg agctgcagaa ggaaaacagc aagcgctgga acccggagat    4320
tcagtacacc tccaactttg aaaagcagac tggtgtggac tttgccgttg acagccaggg    4380
tgtttactct gagcctcgcc ctattggcac tcgttacctc acccgtaatc tgtaattgca    4440
tgttaatcaa taaaccggtt gattcgtttc agttgaactt tggtctcctg tgcttcttat    4500
cttatcggtt tccatagcaa ctggttacac attaactgct tgggtgcgct tcacgataag    4560
aacactgacg tcaccgcggt acccctagtg atggagttgg ccactccctc tatgcgcgct    4620
cgctcgctcg gtggggcctg cggaccaaag gtccgcagac ggcagagctc tgctctgccg    4680
gcccccaccga gcgagcgagc gcgcatagag ggagtggcca a                        4721
```

<210> 181
<211> 737
<212> PRT
<213> capsid protein of adeno-associated virus serotpye 7

<400> 181

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asn Gly Arg Gly Leu Val Leu Pro
        35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Ala Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro
            180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Val Ala Ala Gly Gly
        195                 200                 205
```

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Ser Glu Thr Ala Gly Ser Thr Asn Asp Asn
        260   265   270

Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Arg Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Ile Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr Ser
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
        420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Pro Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Ser Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500   505   510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Thr Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
                        Page 269

        ' 565 '   570   575

Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
         580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
      595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
      610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
         645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
         660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
      690   695   700

Asn Phe Glu Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705   710   715   720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
         725   730   735

Leu

```
<210>   182
<211>   4393
<212>   DNA
<213>   adeno-associated virus serotype 8

<400>   182
cagagaggga gtggccaact ccatcactag gggtagcgcg aagcgcctcc cacgctgccg      60
cgtcagcgct gacgtaaatt acgtcatagg ggagtggtcc tgtattagct gtcacgtgag     120
tgcttttgcg gcattttgcg acaccacgtg gccatttgag gtatatatgg ccgagtgagc     180
gagcaggatc tccattttga ccgcgaaatt tgaacgagca gcagccatgc cgggcttcta     240
cgagatcgtg atcaaggtgc cgagcgacct ggacgagcac ctgccgggca tttctgactc     300
gtttgtgaac tgggtggccg agaaggaatg ggagctgccc ccggattctg acatggatcg     360
gaatctgatc gagcaggcac ccctgaccgt ggccgagaag ctgcagcgcg acttcctggt     420
ccaatggcgc cgcgtgagta aggccccgga ggccctcttc tttgttcagt tcgagaaggg     480
cgagagctac tttcacctgc acgttctggt cgagaccacg ggggtcaagt ccatggtgct     540
aggccgcttc ctgagtcaga ttcgggaaaa gcttggtcca gaccatctac ccgcggggtc     600
gagccccacc ttgcccaact ggttcgcggt gaccaaagac gcggtaatgg cgccggcggg     660
ggggaacaag gtggtggacg agtgctacat ccccaactac ctcctgccca agactcagcc     720
cgagctgcag tgggcgtgga ctaacatgga ggagtatata agcgcgtgct tgaacctggc     780
cgagcgcaaa cggctcgtgg cgcagcacct gacccacgtc agccagacgc aggagcagaa     840
caaggagaat ctgaacccca attctgacgc gcccgtgatc aggtcaaaaa cctccgcgcg     900
ctatatggag ctggtcgggt ggctggtgga ccggggcatc acctccgaga agcagtggat     960
ccaggaggac caggcctcgt acatctcctt caacgccgcc tccaactcgc ggtcccagat    1020
caaggccgcg ctggacaatg ccggcaagat catggcgctg accaaatccg cgcccgacta    1080
cctggtgggg cccctcgctg ccgcggacat acccagaac cgcatctacc gcatcctcgc    1140
```

```
tctcaacggc tacgaccctg cctacgccgg ctccgtcttt ctcggctggg ctcagaaaaa   1200
gttcgggaaa cgcaacacca tctggctgtt tggacccgcc accaccggca agaccaacat   1260
tgcggaagcc atcgcccacg ccgtgccctt ctacggctgc gtcaactgga ccaatgagaa   1320
ctttcccttc aatgattgcg tcgacaagat ggtgatctgg tgggaggagg gcaagatgac   1380
ggccaaggtc gtggagtccg ccaaggccat tctcggcggc agcaaggtgc gcgtggacca   1440
aaagtgcaag tcgtccgccc agatcgaccc caccccgtg atcgtcacct ccaacaccaa    1500
catgtgcgcc gtgattgacg gaacagcac caccttcgag caccagcagc ctctccagga    1560
ccggatgttt aagttcgaac tcacccgccg tctggagcac gactttggca aggtgacaaa    1620
gcaggaagtc aaagagttct tccgctgggc cagtgatcac gtgaccgagg tggcgcatga    1680
gttttacgtc agaaagggcg gagccagcaa aagacccgcc cccgatgacg cggataaaag    1740
cgagcccaag cgggcctgcc cctcagtcgc ggatccatcg acgtcagacg cggaaggagc    1800
tccggtggac tttgccgaca ggtaccaaaa caaatgttct cgtcacgcgg gcatgcttca    1860
gatgctgttt ccctgcaaaa cgtgcgagag aatgaatcag aatttcaaca tttgcttcac    1920
acacggggtc agagactgct cagagtgttt ccccggcgtg tcagaatctc aaccggtcgt    1980
cagaaagagg acgtatcgga aactctgtgc gattcatcat ctgctggggc gggctcccga    2040
gattgcttgc tcggcctgcg atctggtcaa cgtggacctg gatgactgtg tttctgagca    2100
ataaatgact taaaccaggt atggctgccg atggttatct tccagattgg ctcgaggaca    2160
acctctctga gggcattcgc gagtggtggg cgctgaaacc tggagccccg aagcccaaag    2220
ccaaccagca aaagcaggac gacggccggg gtctggtgct tcctggctac aagtacctcg    2280
gacccttcaa cggactcgac aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg    2340
agcacgacaa ggcctacgac cagcagctgc aggcgggtga caatccgtac ctgcggtata    2400
accacgccga cgccgagttt caggagcgtc tgcaagaaga tacgtctttt gggggcaacc    2460
tcgggcgagc agtcttccag gccaagaagc gggttctcga acctctcggt ctggttgagg    2520
aaggcgctaa gacggctcct ggaaagaaga gaccggtaga gccatcaccc cagcgttctc    2580
cagactcctc tacgggcatc ggcaagaaag gccaacagcc cgccagaaaa agactcaatt    2640
ttggtcagac tggcgactca gagtcagttc cagaccctca acctctcgga gaacctccag    2700
cagcgccctc tggtgtggga cctaatacaa tggctgcagg cggtggcgca ccaatggcag    2760
acaataacga aggcgccgac ggagtgggta gttcctcggg aaattggcat tgcgattcca    2820
catggctggg cgacagagtc atcaccacca gcacccgaac ctgggccctg cccacctaca    2880
acaaccacct ctacaagcaa atctccaacg ggacatcggg aggagccacc aacgacaaca    2940
cctacttcgg ctacagcacc ccctgggggt attttgactt taacagattc cactgccact    3000
tttcaccacg tgactggcag cgactcatca acaacaactg gggattccgg cccaagagac    3060
tcagcttcaa gctcttcaac atccaggtca aggaggtcac gcagaatgaa ggcaccaaga    3120
ccatcgccaa taacctcacc agcaccatcc aggtgtttac ggactcggag taccagctgc    3180
cgtacgttct cggctctgcc caccagggct gcctgcctcc gttcccggcg gacgtgttca    3240
tgattcccca gtacggctac ctaacactca caacggtag tcaggccgtg gacgctcct     3300
ccttctactg cctggaatac tttccttcgc agatgctgag aaccggcaac aacttccagt    3360
ttacttacac cttcgaggac gtgccttttc acagcagcta cgcccacagc cagagcttgg    3420
accggctgat gaatcctctg attgaccagt acctgtacta cttgtctcgg actcaaacaa    3480
caggaggcac ggcaaatacg cagactctgg gcttcagcca aggtgggcct aatacaatgg    3540
ccaatcaggc aaagaactgg ctgccaggac cctgttaccg ccaacaacgc gtctcaacga    3600
caaccgggca aaacaacaat agcaactttg cctggactgc tgggaccaaa taccatctga    3660
atggaagaaa ttcattggct aatcctggca tcgctatggc aacacacaaa gacgacgagg    3720
agcgtttttt tcccagtaac gggatcctga tttttggcaa acaaaatgct gccagagaca    3780
atgcggatta cagcgatgtc atgctcacca gcgaggaaga aatcaaaacc actaaccctg    3840
tggctacaga ggaatacggt atcgtggcag ataacttgca gcagcaaaac acggctcctc    3900
```

Page 271

aaattggaac tgtcaacagc caggggggcct tacccggtat ggtctggcag aaccgggacg   3960

tgtacctgca gggtcccatc tgggccaaga ttcctcacac ggacggcaac ttccacccgt   4020

ctccgctgat gggcggcttt ggcctgaaac atcctccgcc tcagatcctg atcaagaaca   4080

cgcctgtacc tgcggatcct ccgaccacct tcaaccagtc aaagctgaac tctttcatca   4140

cgcaatacag caccggacag gtcagcgtgg aaattgaatg ggagctgcag aaggaaaaca   4200

gcaagcgctg gaaccccgag atccagtaca cctccaacta ctacaaatct acaagtgtgg   4260

actttgctgt taatacagaa ggcgtgtact ctgaacccccg ccccattggc acccgttacc   4320

tcacccgtaa tctgtaattg cctgttaatc aataaaccgg ttgattcgtt tcagttgaac   4380

tttggtctct gcg   4393

<210>   183
<211>   738
<212>   PRT
<213>   capsid protein of adeno-associated virus serotype 8

<400>   183

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Gln Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro
                180   185   190

Pro Ala Ala Pro Ser Gly Val Gly Pro Asn Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
        210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Page 272

Leu Arg Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ala Thr Asn Asp
                260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
        370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Thr Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala Asn Thr Gln Thr Leu Gly
    450   455   460

Phe Ser Gln Gly Gly Pro Asn Thr Met Ala Asn Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Thr Gly
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Ala Gly Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro Gly Ile Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Asn Gly Ile Leu Ile
    530   535   540

Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn Ala Asp Tyr Ser Asp Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
        580   585   590

Pro Gln Ile Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Page 273

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Asn Gln Ser Lys Leu Asn Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Ser Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210>   184
<211>   735
<212>   PRT
<213>   vp1, clone hu.60

<400>   184

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
        20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
        100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180   185   190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
    195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
        420   425   430

Leu Met Asn Pro Leu Val Asp Gln Tyr Leu Tyr Leu Asn Lys Thr
    435   440   445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
        500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Page 275

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
          580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
          595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
          610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
               645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
          660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
          675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
          690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
               725   730   735

<210> 185
<211> 735
<212> PRT
<213> vp1, clone hu.61

<400> 185

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
          20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
          35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
          50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
               85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
          100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
          130   135   140

Pro Val Glu His Pro Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
               165   170   175

Page 276

```
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190

Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
            195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
            210             215             220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260             265             270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275             280             285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290             295             300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305             310             315             320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325             330             335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340             345             350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355             360             365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
            370             375             380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385             390             395             400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405             410             415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
            435             440             445

Gln Thr Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
            450             455             460

Ala Gly Pro Thr Asn Met Ser Leu Gln Ala Lys Asn Arg Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485             490             495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515             520             525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
                        Page 277
```

530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Glu Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Thr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Val Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210>   186
<211>   734
<212>   PRT
<213>   vp1, clone hu.53

<400>   186

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
        100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg

Page 278

130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Arg Gln Pro Pro
            180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435   440   445

Gln Thr Ala Ser Gly Thr Gln Gln Ser Arg Leu Leu Phe Ser Gln Ala
    450   455   460

Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly Pro
465   470   475   480

Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn Asn
                485   490   495

```
Ser Asn Phe Pro Trp Thr Gly Ala Thr Lys Tyr Tyr Leu Asn Gly Arg
        500             505             510

Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp Asp
        515             520             525

Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys Glu
        530             535             540

Gly Thr Asn Ala Thr Asn Ala Glu Leu Glu Asn Val Met Ile Thr Asp
545             550             555             560

Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly
                565             570             575

Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Ala Ala Ser Thr Glu
            580             585             590

Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp Arg
        595             600             605

Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp
        610             615             620

Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His
625             630             635             640

Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn Pro
            645             650             655

Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr
            660             665             670

Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu
        675             680             685

Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Asn
690             695             700

Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr Ser
705             710             715             720

Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725             730
```

```
<210>  187
<211>  734
<212>  PRT
<213>  vp1, clone hu.55

<400>  187
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
        20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95
```

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
              115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
              130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
              165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
              180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
              195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
              210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
              245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
              260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
              275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
              325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
              340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
              355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Cys Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
              405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
              420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
              435   440   445

Gln Thr Ala Ser Gly Thr Gln Gln Ser Arg Leu Leu Phe Ser Gln Ala
450   455   460

Page 281

```
Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly Pro
465             470             475             480

Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn Asn
            485             490             495

Ser Asn Phe Pro Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg
            500             505             510

Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp Asp
        515             520             525

Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys Glu
    530             535             540

Gly Thr Asn Ala Thr Asn Ala Glu Leu Glu Asn Val Met Ile Thr Asp
545             550             555             560

Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly
                565             570             575

Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Ala Ala Ser Thr Glu
            580             585             590

Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp Arg
        595             600             605

Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp
    610             615             620

Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His
625             630             635             640

Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn Pro
            645             650             655

Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr
            660             665             670

Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu
    675             680             685

Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Asn
    690             695             700

Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr Ser
705             710             715             720

Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730
```

```
<210>    188
<211>    734
<212>    PRT
<213>    vp1, clone hu.54

<400>    188

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys Arg Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Gly Leu Asp Arg
        420   425   430

Page 283

```
Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435             440             445

Gln Thr Ala Ser Gly Thr Gln Gln Ser Arg Leu Leu Phe Ser Gln Ala
        450             455             460

Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly Pro
465             470             475             480

Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn Asn
            485             490             495

Ser Asn Phe Pro Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Gly
        500             505             510

Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp Asp
        515             520             525

Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys Glu
        530             535             540

Gly Thr Asn Ala Thr Asn Ala Glu Leu Glu Asn Val Met Ile Thr Asp
545             550             555             560

Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly
            565             570             575

Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Ala Ala Ser Thr Glu
        580             585             590

Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp Arg
        595             600             605

Asp Val Tyr Leu Arg Gly Pro Ile Trp Ala Lys Ile Pro His Ala Asp
610             615             620

Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His
625             630             635             640

Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn Pro
            645             650             655

Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr
            660             665             670

Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu
        675             680             685

Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Asn
        690             695             700

Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr Ser
705             710             715             720

Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730
```

```
<210>    189
<211>    735
<212>    PRT
<213>    vp1, clone hu.49

<400>    189

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Lys Asp Thr Leu Ser
1           5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
        20              25              30
```

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Gly Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu Tyr Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Ser Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
        290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340   345   350

Val Pro Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
        370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser

Page 285

```
"385'                 390                 395                 400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405             410             415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465             470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485             490             495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515             520             525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580             585             590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
    595             600             605

Arg Asp Val His Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>    190
<211>    735
<212>    PRT
<213>    vp1, clone hu.51
```

<400> 190

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115                 120                 125

Leu Gly Leu Val Gly Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180                 185                 190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195                 200                 205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210                 215                 220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225                 230                 235                 240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245                 250                 255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260                 265                 270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275                 280                 285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290                 295                 300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305                 310                 315                 320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                 330                 335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340                 345                 350
```

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
       355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
       370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
       405   410   415

Asp Val Pro Phe His Ser Gly Tyr Ala His Ser Gln Ser Leu Asp Arg
       420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Thr Thr
       435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
       450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
              485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
              500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
       515   520   525

Asn Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
       530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
              565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
              580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
       595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
       610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
              645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
              660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
              675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
       690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
              725   730   735

<210> 191
<211> 735
<212> PRT
<213> vp1, clone hu.52

<400> 191

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
          35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
      50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115   120   125

Leu Gly Leu Val Gly Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
      130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
              165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
              180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
          195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
      210   215   220

Ser Gly Asn Arg His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
              245   250   255

Tyr Arg Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
              260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
          275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
      290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Page 289

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Ser Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Pro Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Ser Thr Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asn Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Pro Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Page 290

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730   735

<210> 192
<211> 735
<212> PRT
<213> vp1, clone hu.56

<400> 192

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ser Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Val
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Leu Glu Tyr Gln Leu Pro Tyr
        340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn
            485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
        580   585   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
Page 292

```
                  645                    650                    655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660                    665                    670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
            675                    680                    685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                    695                    700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                    710                    715                    720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                    730                    735
```

```
<210>   193
<211>   734
<212>   PRT
<213>   vp1, clone hu.57

<400>   193
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1           5                   10                     15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Lys
            20                 25                     30

Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro Gly
        35                     40                 45

Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro Val
    50                     55                 60

Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp Arg
65                     70                 75                     80

Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
                85                     90                 95

Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly Asn
                100                    105                110

Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Leu
            115                    120                125

Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg Pro
        130                    135                140

Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly Lys
145                    150                155                160

Ala Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr Gly
                165                    170                175

Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro Ala
            180                    185                190

Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly Ala
            195                    200                205

Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser Ser
    210                    215                    220

Gly Asp Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile Thr
225                    230                    235                    240

Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr
```

```
                    245              250              255
        Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr Phe
                         260              265              270

        Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys
                     275              280              285

        His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly
                 290              295              300

        Phe Arg Pro Lys Arg Leu Asn Leu Lys Leu Phe Asn Ile Gln Val Lys
        305              310              315              320

        Glu Val Thr Gln Asn Asp Gly Thr Thr Ile Ala Asn Asn Leu Thr
                         325              330              335

        Ser Thr Val Gln Val Phe Thr Asp Leu Glu Tyr Gln Leu Pro Tyr Val
                     340              345              350

        Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val
                     355              360              365

        Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln
                 370              375              380

        Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln
        385              390              395              400

        Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu Asp
                     405              410              415

        Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu
                         420              425              430

        Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr Asn
                 435              440              445

        Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln Ala
             450              455              460

        Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly Pro
        465              470              475              480

        Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ala Ala Asp Asn Asn Asn
                     485              490              495

        Gly Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg
                 500              505              510

        Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp Asp
             515              520              525

        Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys Gln
             530              535              540

        Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr Asp
        545              550              555              560

        Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr Gly
                     565              570              575

        Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Arg Ala Ala Thr Ser
                 580              585              590

        Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp Arg
             595              600              605
```

Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp
610   615   620

Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His
625   630   635   640

Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn Pro
                645   650   655

Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr
                660   665   670

Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu
                675   680   685

Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Asn
690   695   700

Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr Ser
705   710   715   720

Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730

<210>   194
<211>   735
<212>   PRT
<213>   vp1, clone hu.58

<400>   194

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asp His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
                115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Page 295

Ala Pro Met Ala Asp Asn Asn Asp Gly Ala Asp Gly Val Gly Asn Ser
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
        290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Arg Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                485   490   495

Asn Ser Glu Tyr Ser Trp Ile Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Page 296

```
Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ser Thr
            580                 585                 590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
            595                 600                 605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610                 615                 620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625                 630                 635                 640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                    645                 650                 655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660                 665                 670

Tyr Ser Thr Gly Arg Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675                 680                 685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                 695                 700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                 710                 715                 720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725                 730                 735


<210>   195
<211>   735
<212>   PRT
<213>   vp1, clone hu.63

<400>   195

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10                  15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20                  25                  30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Pro Lys Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                 150                 155                 160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165                 170                 175
```

```
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
        180             185             190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195             200             205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
        210             215             220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225             230             235             240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245             250             255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
        260             265             270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
        275             280             285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290             295             300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305             310             315             320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325             330             335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
        340             345             350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355             360             365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370             375             380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385             390             395             400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405             410             415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
        420             425             430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
        435             440             445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450             455             460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465.            470             475             480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485             490             495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
        500             505             510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515             520             525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530             535             540
```

Page 298

```
Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545             550             555             560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565             570             575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
                580             585             590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595             600             605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610             615             620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625             630             635             640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645             650             655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
                660             665             670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675             680             685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725             730             735
```

```
<210>   196
<211>   735
<212>   PRT
<213>   vp1, clone hu.64

<400>   196
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20              25              30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Arg Gln Leu Asp Gly Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
        100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
    115             120             125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140
```

Page 299

Pro Val Glu His Ser Leu Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ala Gly Gln Gln Pro Ala Arg Arg Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
             180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
         195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
     210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Arg Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
         275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
     290   295   300

Gly Ser Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
             340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
         355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
     370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
             420   425   430

Leu Met Asn Pro Leu Val Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
         435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
     450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly

```
                  500                   505                   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515                   520                   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530                   535                   540

Gln Asp Ser Gly Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545                   550                   555                   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                  565                   570                   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580                   585                   590

Ser Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595                   600                   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610                   615                   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625                   630                   635                   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                  645                   650                   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660                   665                   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675                   680                   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690                   695                   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705                   710                   715                   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                  725                   730                   735
```

```
<210>  197
<211>  738
<212>  PRT
<213>  vp1, clone hu.66

<400>  197
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5                   10                  15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
        20                  25                  30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
    35                  40                  45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
```

                    100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Ala Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
        195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
        260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
    275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Glu Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Cys Ala His Ser Gln Ser
            420   425   430

Ser Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Arg Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Page 302

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
        580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210> 198
<211> 738
<212> PRT
<213> vp1, clone hu.67

<400> 198

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Leu
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
50   55   60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
            165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
        210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
            275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
        290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
            355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
        370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Gly Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Arg Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Thr Gly
            580   585   590

Pro Ile Val Gly Asn Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
            595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210>   199
<211>   2175
<212>   DNA
<213>   adeno-associated virus serotype 5

<400>   199

```
atgtcttttg ttgatcaccc tccagattgg ttggaagaag ttggtgaagg tcttcgcgag     60

tttttgggcc ttgaagcggg cccaccgaaa ccaaaaccca atcagcagca tcaagatcaa    120

gcccgtggtc ttgtgctgcc tggttataac tatctcggac ccggaaacgg tctcgatcga    180

ggagagcctg tcaacagggc agacgaggtc gcgcgagagc acgacatctc gtacaacgag    240

cagcttgagg cgggagacaa cccctacctc aagtacaacc acgcggacgc cgagtttcag    300

gagaagctcg ccgacgacac atccttcggg ggaaacctcg gaaaggcagt ctttcaggcc    360

aagaaaaggg ttctcgaacc ttttggcctg gttgaagagg gtgctaagac ggcccctacc    420

ggaaagcgga tagacgacca ctttccaaaa agaaagaagg ctcggaccga gaggactcc     480

aagccttcca cctcgtcaga cgccgaagct ggacccagcg gatcccagca gctgcaaatc    540

ccagcccaac cagcctcaag tttgggagct gatacaatgt ctgcgggagg tggcggccca    600

ttgggcgaca ataaccaagg tgccgatgga gtgggcaatg cctcgggaga ttggcattgc    660

gattccacgt ggatgggga cagagtcgtc accaagtcca cccgaacctg ggtgctgccc     720

agctacaaca accaccagta ccgagagatc aaaagcggct ccgtcgacgg aagcaacgcc    780

aacgcctact ttggatacag caccccctgg gggtactttg actttaaccc cttccacagc    840

cactggagcc cccgagactg gcaaagactc atcaacaact actggggctt cagaccccgg    900

tccctcagag tcaaaatctt caacattcaa gtcaaagagg tcacggtgca ggactccacc    960

accaccatcg ccaacaacct cacctccacc gtccaagtgt ttacggacga cgactaccag   1020

ctgccctacg tcgtcggcaa cgggaccgag ggatgcctgc cggccttccc tccgcaggtc   1080

tttacgctgc cgcagtacgg ttacgcgacg ctgaaccgcg acaacacaga aaatcccacc   1140

gagaggagca gcttcttctg cctagagtac tttcccagca agatgctgag aacgggcaac   1200

aactttgagt ttacctacaa ctttgaggag gtgcccttcc actccagctt cgctcccagt   1260

cagaacctgt tcaagctggc caacccgctg gtggaccagt acttgtaccg cttcgtgagc   1320

acaaataaca ctggcggagt ccagttcaac aagaacctgg ccgggagata cgccaacacc   1380

tacaaaaact ggttcccggg gcccatgggc cgaacccagg ctggaacct gggctccggg     1440

gtcaaccgcg ccagtgtcag cgccttcgcc acgaccaata ggatggagct cgagggcgcg   1500

agttaccagg tgcccccgca gccgaacggc atgaccaaca acctccaggg cagcaacacc   1560

tatgccctgg agaacactat gatcttcaac agccagccgg cgaacccggg caccaccgcc   1620

acgtacctcg agggcaacat gctcatcacc agcgagagcg agacgcagcc ggtgaaccgc   1680

gtggcgtaca cgtcggcgg gcagatggcc accaacaacc agagctccac cactgcccc     1740

gcgaccggca cgtacaacct ccaggaaatc gtgccggca gcgtgtggat ggagagggac    1800

gtgtacctcc aaggacccat ctgggccaag atcccagaga cgggggcgca ctttcacccc   1860

tctccggcca tgggcggatt cggactcaaa cacccaccgc ccatgatgct catcaagaac   1920

acgcctgtgc ccggaaatat caccagcttc tcggacgtgc ccgtcagcag cttcatcacc   1980

cagtacagca ccgggcaggt caccgtggag atggagtggg agctcaagaa ggaaaactcc   2040

aagaggtgga acccagagat ccagtacaca aacaactaca cgacccccca gtttgtggac   2100

tttgccccgg acagcaccgg ggaatacaga accaccagac ctatcggaac ccgatacctt   2160

acccgacccc.tttaa                                                     2175
```

```
<210>  200
<211>  2211
<212>  DNA
<213>  adeno-associated virus, serotype 3-3

<400>  200
atggctgctg acggttatct tccagattgg ctcgaggaca accttttctga aggcattcgt    60

gagtggtggg ctctgaaacc tggagtccct caacccaaag cgaaccaaca acaccaggac   120

aaccgtcggg gtcttgtgct tccgggttac aaatacctcg acccggtaa cggactcgac    180

aaaggagagc cggtcaacga ggcggacgcg gcagccctcg aacacgacaa agcttacgac   240

cagcagctca aggccggtga caacccgtac ctcaagtaca ccacgccga cgccgagttt    300
```

```
caggagcgtc ttcaagaaga tacgtctttt gggggcaacc ttggcagagc agtcttccag      360

gccaaaaaga ggatccttga gcctcttggt ctggttgagg aagcagctaa aacggctcct      420

ggaaagaagg gggctgtaga tcagtctcct caggaaccgg actcatcatc tggtgttggc      480

aaatcgggca aacagcctgc cagaaaaaga ctaaatttcg gtcagactgg agactcagag      540

tcagtcccag accctcaacc tctcggagaa ccaccagcag cccccacaag tttgggatct      600

aatacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaggg tgccgatgga      660

gtgggtaatt cctcaggaaa ttggcattgc gattcccaat ggctgggcga cagagtcatc      720

accaccagca ccagaacctg ggccctgccc acttacaaca accatctcta caagcaaatc      780

tccagccaat caggagcttc aaacgacaac cactactttg ctacagcac ccccttgggggg      840

tattttgact ttaacagatt ccactgccac ttctcaccac gtgactggca gcgactcatt      900

aacaacaact ggggattccg gcccaagaaa ctcagcttca agctcttcaa catccaagtt      960

agaggggtca cgcagaacga tggcacgacg actattgcca ataaccttac cagcacggtt     1020

caagtgttta cggactcgga gtatcagctc ccgtacgtgc tcgggtcggc gcaccaaggc     1080

tgtctcccgc cgtttccagc ggacgtcttc atggtccctc agtatggata cctcaccctg     1140

aacaacggaa gtcaagcggt gggacgctca tccttttact gcctggagta cttcccttcg     1200

cagatgctaa ggactggaaa taacttccaa ttcagctata ccttcgagga tgtacctttt     1260

cacagcagct acgctcacag ccagagtttg gatcgcttga tgaatcctct tattgatcag     1320

tatctgtact acctgaacag aacgcaagga acaacctctg gaacaaccaa ccaatcacgg     1380

ctgctttta gccaggctgg gcctcagtct atgtctttgc aggccagaaa ttggctacct     1440

gggccctgct accggcaaca gagactttca aagactgcta cgacaacaa caacagtaac     1500

tttccttgga cagcggccag caaatatcat ctcaatggcc gcgactcgct ggtgaatcca     1560

ggaccagcta tggccagtca caaggacgat gaagaaaaat ttttccctat gcacggcaat     1620

ctaatatttg gcaaagaagg gacaacggca agtaacgcag aattagataa tgtaatgatt     1680

acggatgaag aagagattcg taccaccaat cctgtggcaa cagagcagta tggaactgtg     1740

gcaaataact tgcagagctc aaatacagct cccacgactg gaactgtcaa tcatcagggg     1800

gccttacctg gcatggtgtg gcaagatcgt gacgtgtacc ttcaaggacc tatctgggca     1860

aagattcctc acacggatgg acactttcat ccttctcctc tgatgggagg ctttggactg     1920

aaacatccgc ctcctcaaat catgatcaaa aatactccgg taccggcaaa tcctccgacg     1980

actttcagcc cggccaagtt tgcttcattt atcactcagt actccactgg acaggtcagc     2040

gtggaaattg agtgggagct acagaaagaa aacagcaaac gttggaatcc agagattcag     2100

tacacttcca actacaacaa gtctgttaat gtggacttta ctgtagacac taatggtgtt     2160

tatagtgaac ctcgccctat tggaacccgg tatctcacac gaaacttgta a            2211
```

<210> 201
<211> 2205
<212> DNA
<213> adeno-associated virus, serotype 4-4

<400> 201
```
atgactgacg gttaccttcc agattggcta gaggacaacc tctctgaagg cgttcgagag       60

tggtgggcgc tgcaacctgg agcccctaaa cccaaggcaa atcaacaaca tcaggacaac      120

gctcggggtc ttgtgcttcc gggttacaaa tacctcggac ccggcaacgg actcgacaag      180

ggggaacccg tcaacgcagc ggacgcggca gccctcgagc acgacaaggc ctacgaccag      240

cagctcaagg ccggtgacaa cccctacctc aagtacaacc acgccgacgc ggagttccag      300

cagcggcttc agggcgacac atcgtttggg ggcaacctcg gcagagcagt cttccaggcc      360

aaaaagaggg ttcttgaacc tcttggtctg gttgagcaag cgggtgagac ggctcctgga      420

aagaagagac cgttgattga atcccccag cagcccgact cctcacggg tatcggcaaa      480

aaaggcaagc agccggctaa aaagaagctc gttttcgaag acgaaactgg agcaggcgac      540

ggacccctg agggatcaac ttccggagcc atgtctgatg acagtgagat gcgtgcagca      600
```

```
gctggcggag ctgcagtcga gggcggacaa ggtgccgatg gagtgggtaa tgcctcgggt      660

gattggcatt gcgattccac ctggtctgag ggccacgtca cgaccaccag caccagaacc      720

tgggtcttgc ccacctacaa caaccacctc tacaagcgac tcggagagag cctgcagtcc      780

aacacctaca acggattctc cacccctgg ggatactttg acttcaaccg cttccactgc      840

cacttctcac cacgtgactg gcagcgactc atcaacaaca actggggcat gcgacccaaa      900

gccatgcggg tcaaaatctt caacatccag gtcaaggagg tcacgacgtc gaacggcgag      960

acaacggtgg ctaataacct taccagcacg gttcagatct ttgcggactc gtcgtacgaa     1020

ctgccgtacg tgatggatgc gggtcaagag ggcagcctgc ctcctttcc caacgacgtc     1080

tttatggtgc cccagtacgg ctactgtgga ctggtgaccg gcaacacttc gcagcaacag     1140

actgacagaa atgccttcta ctgcctggag tactttcctt cgcagatgct gcggactggc     1200

aacaactttg aaattacgta cagttttgag aaggtgcctt tccactcgat gtacgcgcac     1260

agccagagcc tggaccggct gatgaaccct ctcatcgacc agtacctgtg gggactgcaa     1320

tcgaccacca ccggaaccac cctgaatgcc gggactgcca ccaccaactt taccaagctg     1380

cggcctacca acttttccaa ctttaaaaag aactggctgc ccgggccttc aatcaagcag     1440

cagggcttct caaagactgc caatcaaaac tacaagatcc ctgccaccgg gtcagacagt     1500

ctcatcaaat acgagacgca cagcactctg gacggaagat ggagtgccct gacccccgga     1560

cctccaatgg ccacggctgg acctgcggac agcaagttca gcaacagcca gctcatcttt     1620

gcggggccta acagaacgg caacacggcc accgtacccg ggactctgat cttcacctct     1680

gaggaggagc tggcagccac caacgccacc gatacggaca tgtggggcaa cctacctggc     1740

ggtgaccaga gcaacagcaa cctgccgacc gtggacagac tgacagcctt gggagccgtg     1800

cctggaatgg tctggcaaaa cagagacatt tactaccagg gtcccatttg gccaagatt     1860

cctcataccg atggacactt tcaccctca ccgctgattg gtgggtttgg gctgaaacac     1920

ccgcctcctc aaatttttat caagaacacc ccggtacctg cgaatcctgc aacgaccttc     1980

agctctactc cggtaaactc cttcattact cagtacagca ctggccaggt gtcggtgcag     2040

attgactggg agatccagaa ggagcggtcc aaacgctgga accccgaggt ccagtttacc     2100

tccaactacg acagcaaaa ctctctgttg tgggctcccg atgcggctgg gaaatacact     2160

gagcctaggg ctatcggtac ccgctacctc acccaccacc tgtaa                     2205
```

```
<210>    202
<211>    2211
<212>    DNA
<213>    adeno-associated virus, serotype 1

<400>    202
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acttgaaacc tggagccccg aagcccaaag ccaaccagca aaagcaggac      120

gacggccggg tctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac      180

aagggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac      240

cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt      300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct      420

ggaaagaaac gtccggtaga gcagtcgcca caagagccag actcctcctc gggcatcggc      480

aagacaggcc agcagcccgc taaaaagaga ctcaattttg gtcagactgg cgactcagag      540

tcagtccccg atccacaacc tctcggagaa cctccagcaa ccccgctgc tgtgggacct      600

actacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaagg cgccgacgga      660

gtgggtaatg cctcaggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc      720

accaccagca cccgcacctg ggccttgccc acctacaata accacctcta caagcaaatc      780

tccagtgctt caacgggggc cagcaacgac aaccactact cggctacag cacccccctgg      840

gggtattttg atttcaacag attccactgc cacttttcac cacgtgactg gcagcgactc      900
```

```
atcaacaaca attgggggatt ccggcccaag agactcaact tcaaactctt caacatccaa   960
gtcaaggagg tcacgacgaa tgatggcgtc acaaccatcg ctaataacct taccagcacg  1020
gttcaagtct tctcggactc ggagtaccag cttccgtacg tcctcggctc tgcgcaccag  1080
ggctgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcaatacgg ctacctgacg  1140
ctcaacaatg gcagccaagc cgtgggacgt tcatccttttt actgcctgga atatttccct  1200
tctcagatgc tgagaacggg caacaacttt accttcagct acaccttttga ggaagtgcct  1260
ttccacagca gctacgcgca cagccagagc ctggaccggc tgatgaatcc tctcatcgac  1320
caatacctgt attacctgaa cagaactcaa aatcagtccg gaagtgccca aaacaaggac  1380
ttgctgttta gccgtgggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct  1440
ggaccctgtt atcggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaat  1500
tttacctgga ctggtgcttc aaaatataac ctcaatgggc gtgaatccat catcaaccct  1560
ggcactgcta tggcctcaca caaagacgac gaagacaagt ctttcccat gagcggtgtc  1620
atgatttttg gaaaagagag cgccggagct tcaaacactg cattggacaa tgtcatgatt  1680
acagacgaag aggaaattaa agccactaac cctgtggcca ccgaaagatt tgggaccgtg  1740
gcagtcaatt ccagagcag cagcacagac cctgcgaccg gagatgtgca tgctatggga  1800
gcattacctg gcatggtgtg gcaagataga gacgtgtacc tgcagggtcc catttgggcc  1860
aaaattcctc acacagatgg acacttttcac ccgtctcctc ttatgggcgg ctttggactc  1920
aagaacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggcg  1980
gagttttcag ctacaaagtt tgcttcattc atcacccaat actccacagg acaagtgagt  2040
gtggaaattg aatgggagct gcagaaagaa aacagcaagc gctggaatcc cgaagtgcag  2100
tacacatcca attatgcaaa atctgccaac gttgatttta ctgtggacaa caatggactt  2160
tatactgagc ctcgcccca t tggcacccgt taccttaccc gtcccctgta a            2211
```

<210> 203
<211> 2211
<212> DNA
<213> adeno-associated virus, serotype 6

<400> 203
```
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60
gagtggtggg acttgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac   120
gacggccggg gtctggtgct tcctggctac aagtacctcg gaccccttcaa cggactcgac   180
aagggggagc ccgtcaacgc ggcggatgca gcggccctcg agcacgacaa ggcctacgac   240
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt   300
caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag   360
gccaagaaga gggttctcga acctttttggt ctggttgagg aaggtgctaa gacggctcct   420
ggaaagaaac gtccggtaga gcagtcgcca caagagccag actcctcctc gggcattggc   480
aagacaggcc agcagcccgc taaaaagaga ctcaattttg gtcagactgg cgactcagag   540
tcagtccccg acccacaacc tctcggagaa cctccagcaa ccccgctgc tgtgggacct   600
actacaatgg cttcaggcgg tggcgcacca atggcagaca ataacgaagg cgccgacgga   660
gtgggtaatg cctcaggaaa ttggcattgc gattccacat ggctgggcga cagagtcatc   720
accaccagca cccgaacatg ggccttgccc acctataaca accacctcta caagcaaatc   780
tccagtgctt caacgggggc cagcaacgac aaccactact cggctacag cacccccctgg   840
gggtattttg atttcaacag attccactgc catttctcac cacgtgactg cagcgactc   900
atcaacaaca attgggggatt ccggcccaag agactcaact tcaagctctt caacatccaa   960
gtcaaggagg tcacgacgaa tgatggcgtc acgaccatcg ctaataacct taccagcacg  1020
gttcaagtct tctcggactc ggagtaccag ttgccgtacg tcctcggctc tgcgcaccag  1080
ggctgcctcc ctccgttccc ggcggacgtg ttcatgattc cgcagtacgg ctacctaacg  1140
ctcaacaatg gcagccaggc agtgggacgg tcatccttttt actgcctgga atatttccca  1200
```

Page 309

```
tcgcagatgc tgagaacggg caataacttt accttcagct acaccttcga ggacgtgcct      1260
ttccacagca gctacgcgca cagccagagc ctggaccggc tgatgaatcc tctcatcgac      1320
cagtacctgt attacctgaa cagaactcag aatcagtccg gaagtgccca aaacaaggac      1380
ttgctgttta gccggggggtc tccagctggc atgtctgttc agcccaaaaa ctggctacct      1440
ggaccctgtt accggcagca gcgcgtttct aaaacaaaaa cagacaacaa caacagcaac      1500
tttacctgga ctggtgcttc aaaatataac cttaatgggc gtgaatctat aatcaaccct      1560
ggcactgcta tggcctcaca caaagacgac aaagacaagt ctttcccat gagcggtgtc       1620
atgattttttg gaaggagag cgccggagct tcaaacactg cattggacaa tgtcatgatc      1680
acagacgaag aggaaatcaa agccactaac cccgtggcca ccgaaagatt tgggactgtg      1740
gcagtcaatc tccagagcag cagcacagac cctgcgaccg gagatgtgca tgttatggga      1800
gccttacctg gaatggtgtg gcaagacaga gacgtatacc tgcagggtcc tatttgggcc      1860
aaaattcctc acacggatgg acactttcac ccgtctcctc tcatgggcgg ctttggactt      1920
aagcacccgc ctcctcagat cctcatcaaa aacacgcctg ttcctgcgaa tcctccggca      1980
gagtttttcgg ctacaaagtt tgcttcattc atcacccagt attccacagg acaagtgagc      2040
gtggagattg aatgggagct gcagaaagaa aacagcaaac gctggaatcc cgaagtgcag      2100
tatacatcta actatgcaaa atctgccaac gttgatttca ctgtggacaa caatggactt      2160
tatactgagc ctcgccccat tggcacccgt tacctcaccc gtcccctgta a             2211
```

```
<210>   204
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.63

<400>   204
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120
gacagcaggg gtcttgtgct tcctgggtac aagtaccttg gacccttcaa cggactcgac      180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac      240
cggcagctcg acagcggaga caacccgtac cccaagtaca ccacgccga cgcggagttc        300
caggagcgtc ttaaagaaga tacgtctttt ggggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctcct gcggagccag actcctcctc gggaaccgga      480
aaagcgggcc agcagcctgc aagaaagaga ttgaatttcg gtcagactgg agacgcagac      540
tccgtacctg accccccagcc tctcggacag ccaccagcag cccccctctgg tctgggaact      600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga      660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc      720
accaccagca cccgcacctg ggctctgccc acctacaaca ccacctcta caagcagatt        780
tccagccaat caggagcctc aaacgacaac cactactttg ctacagcac cccttggggg        840
tattttgact tcaacagatt ccactgccac ttttcgccac gtgactggca aagactcatc      900
aacaacaatt ggggattccg gcccaaaaga ctcaacttca gctctttaa cattcaagtc       960
aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt     1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga     1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcacccctg     1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct     1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga cgttcctttc     1260
cacagcagct acgcccacag ccagagtttg daccgtctca tgaatcctct catcgaccag     1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtcaaggctt     1380
cagtttctc aggccggagc aagtgacatt cgggaccagt ctaggaactg gcttcctgga     1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac     1500
```

```
tcgtggactg gagctaccaa gtaccacctt aatggaagag actctctggt gaatccgggc   1560
ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc   1620
atctttggaa aacaagactc gggaaaaact aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtgtggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca tttttcacccc tctcccctca tgggcggatt cggacttaaa   1920
caccctcccc cgcagattct catcaagaac accccggtac ctgcgaatcc ttcgactacc   1980
ttcagtgcgg caaagtttgc ttccttcatt acacagtact ccacggggca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gattcagtac   2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat   2160
tcagagcctc gcccccattgg caccaggtac ctgactcgta atctgtaa   2208
```

<210> 205
<211> 2208
<212> DNA
<213> new AAV serotype, clone hu.56

<400> 205

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctggatac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaagcgggca accagcctgc aagaaaaaga ttgaatttcg gtcagactgg agacgcagac    540
tccgtacctg accccccagcc tctcggacag ccaccagcat ccccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca taacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcgtc    720
accaccagca cccgcacctg ggccctgccc acctacaaca accacctcta caagcagatt    780
tccagccaat caggagccag caacgacaac cactactttg ctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcgccac gcgactggca gagactcatc    900
aacaacaact ggggattccg gcccaaaaga ctcaacttca gctgtttaa cattcaagtc    960
aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgacttgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
aacaacggga gtcaggcggt aggacgctct tccttttact gcctggagta ctttccttct   1200
cagatgcttc gcaccggaaa caactttacc ttcagctaca cttttgaaga cgttcctttc   1260
cacagcagct acgctcacag tcaaagtctg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccactacgca gtccaggctt   1380
cagttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcaaag cggggttctc   1620
atctttggaa agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt   1800
```

```
cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcccat ctgggcaaaa   1860

attccacaca cggacggaca tttcacccc tctcccctca tgggcggatt tggacttaaa   1920

caccctcctc cacagattct cattaagaat accccggtac ctgcgaatcc ttcgaccacc   1980

ttcagcgcgg caaagtttgc ttccttcatc acacagtatt ccacggggca ggtcagcgtg   2040

gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga aattcagtac   2100

acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tgggggtgtat   2160

tcagagcctc gccctattgg caccagatac ctgactcgta atctgtaa            2208
```

<210> 206
<211> 2205
<212> DNA
<213> new AAV serotype, clone hu.57

<400> 206

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga    60

cagtggtgga agctcaaacc tggcccacca ccaaagcccg cagagcggca taaggacgac   120

agcaggggtc ttgtgcttcc tggatacaag tacctcggac ccttcaacgg actcgacaag   180

ggagagccgg tcaacgaggc agacgccgcg gccctcgagc acgacaaggc ctacgaccgg   240

cagctcgaca gcggagacaa cccgtacctc aagtacaacc acgccgacgc ggagtttcag   300

gagcgcctta agaagatac gtcttttggg ggcaacctcg gacgagcagt cttccaggcg   360

aaaaagaggg ttcttgaacc tctgggcctg gttgaggaac ctgttaagac ggctccggga   420

aaaaagaggc ccgtagagca ctctcctgtg gagccagact cctcctcggg aaccggaaaa   480

gcgggcaacc agcctgcaag aaaaagattg aatttcggtc agactggaga cgcagactcc   540

gtacctgacc cccagcctct cggacagcca ccagcagccc cctctggtct gggaactaat   600

acgatggcta caggcagtgg cgcaccaatg gcagacaata cgagggcgc cgacgagtg   660

ggtaattcct cgggagattg gcattgcgat tccacatgga tgggcgacag agtcatcacc   720

accagcaccc gcacctgggc cctgcccacc tacaacaacc acctctacaa gcagatttcc   780

agccaatcag gagccagcaa tgacaaccac tactttggct acagcacccc ttggggggtat   840

tttgacttca acagattcca ctgccacttt tcgccacgcg actggcagag actcatcaac   900

aacaactggg gattccggcc caaaagactc aacctcaagc tgtttaacat tcaagtcaag   960

gaggtcacgc agaatgacgg tacgacgacg attgccaata accttaccag cacggttcag   1020

gtgtttactg acttggagta ccagctcccg tacgtcctcg gctcggcgca tcaaggatgc   1080

ctcccgccgt tcccagcaga cgtcttcatg gtgccacagt atggatacct caccctgaac   1140

aacgggagtc aggcggtagg acgctcttcc ttttactgcc tggagtactt tccttctcag   1200

atgcttcgta ccggaaacaa ctttacttc agctacactt ttgaagacgt tcctttccac   1260

agcagctacg ctcacagtca aagtctggac cgtctcatga tcctctcat cgaccagtac   1320

ctgtattact tgagcagaac aaacactcca agcggaacca ctacgcagtc caggcttcag   1380

ttttctcagg ccggagcgag tgacattcgg gaccagtcta ggaactggct tcctggaccc   1440

tgttaccgcc agcagcgagt atcaaagaca gctgcggata caacaacgg tgaatactcg   1500

tggactggag ctaccaagta ccacctcaat ggcagagact ctctggtgaa tccgggcccg   1560

gccatggcca gccacaagga cgatgaagaa aagttttttc ctcaaagcgg ggttctcatc   1620

tttgggaagc aaggctcaga gaaaacaaat gtggacattg aaaaggtcat gattacagac   1680

gaagaggaaa tcaggaccac caatcccgtg gctacggagc agtatggttc tgtatctacc   1740

aacctccaga gcggcaacac acgagcagct acctcagatg tcaacacaca aggcgttctt   1800

ccaggcatgg tctggcagga cagagacgtg tacctgcagg ggcccatctg gcaaaaatt   1860

ccacacacgg acggacattt tcacccctct cccctcatgg gcggatttgg acttaaacac   1920

cctcctccac agattctcat taagaatacc ccggtacctg cgaatccttc gaccaccttc   1980

agcgcggcaa agtttgcttc cttcatcaca cagtattcca cggggcaggt cagcgtggag   2040

atcgagtggg agctgcagaa ggagaacagc aaacgctgga atcccgaaat tcagtacact   2100
```

```
tccaactaca acaaatctgt taatgtggac tttactgtgg acactaatgg ggtgtattca    2160
gagcctcgcc ctattggcac cagatacctg actcgtaatc tgtaa               2205
```

```
<210>    207
<211>    2208
<212>    DNA
<213>    new AAV serotype, clone hu.58
```

```
<400>    207
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga    60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg cataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtacg accacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcaaaaaaga gggttcttga acctctgggc ctggttgagg agcctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaagcgggca accagcctgc aagaaagaga ttgaatttcg gtcagactgg agacgcagac    540
tccgtacctg acccccagcc tctcggacag ccaccagcag cccccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca taacgatgg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggctctgccc acctacaaca accatctgta caagcagatt    780
tccagccaat caggagccag caacgacaac cactactttg gctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca agactcatc    900
aacaacaact ggggattccg gcccaagaga ctcaacttca gctctttaa cattcaagtc    960
agagaggtca cgcagaatga tggtacgacg acgattgcca ataaccttac cagcacggtt    1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga    1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg    1140
aacaacggga gtcaggcagt aggacgctct tcatttact gcctggagta cttcccttct    1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga tgttcctttc    1260
cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag    1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt    1380
cagtttttctc aggccggagc gagtgacatt cgggatcagt ctaggaactg gcttcctgga    1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg acaacaacaa cagtgaatac    1500
tcgtggattg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc    1560
ccggcaatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcagag cgggggttctc    1620
atctttggaa aacaaggatc agagaaaaca aatgtggaca ttgaaaaggt catgattaca    1680
gacgaagagg aaatcagaac caccaatccc gtggccacgg agcagtatgg ttctgtatct    1740
accaacctcc agagcggcaa cacacaagca tctactgcag atgtcaacac acaaggcgtt    1800
cttccaggca tggtctggca ggacagagac gtgtacctgc aggggcctat ctgggcaaag    1860
attccgcaca cggacggaca ttttcacccc tctcccctca tgggcggatt cggacttaaa    1920
caccctcctc cacagattct catcaaaaac accccggtac ctgcgaatcc ttcgaccacc    1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtatt ccacggggcg ggtcagcgtg    2040
gagatcgagt gggagctaca gaaggagaac agcaaacgct ggaatcccga gatccagtac    2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa          2208
```

```
<210>    208
<211>    2208
<212>    DNA
<213>    new AAV serotype, clone hu.51
```

Page 313

<400> 208
```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga    60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac   120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gaccccttca cggactcgac   180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac   240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt   300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag   360
gcgaaaaaga gggttcttga acctctgggc ctggttgggg aacctgtcaa gacggctcca   420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga   480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac   540
tcagtacctg accccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact   600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga   660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc   720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt   780
tccagccaat caggagcctc gaacgacaat cactactttg ctacagcac cccttggggg   840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc   900
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc   960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt  1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga  1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg  1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct  1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc  1260
cacagcggct acgctcacag ccagagtctg accgtctca tgaatcctct catcgaccag  1320
tacctgtatt acttgagcac aacaaacact ccaagtggaa ccaccacgca gtcaaggctt  1380
cagtttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga  1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac  1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc  1560
ccggccatgg caagccacaa ggacaatgaa gaaagttttt tcctcagag cggggttctc  1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca  1680
gacgaagagg aaatcaggac aaccaatccc gtggctacga gcagtacgg ttctgtatct  1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt  1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag  1860
attccacaca cggacggaca ttttcacccc ctcccctca tgggtggatt cggacttaaa  1920
cacctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc  1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg  2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac  2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat  2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

<210>   209
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.49

<400>   209
```
atggctgccg atggttatct tccagattgg ctcaaggaca ctctctctga aggaataaga    60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac   120
gacagcgggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac   180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agtacgacaa ggcctacgac   240
cggcagctcg acagcggaga caacccgtac ctcaagtaca accacgccga cgcggagttt   300
```

```
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaacagga      480
aaagcgggcc agcagcctgc gagaaagaga ttgaattttg gtcagactgg agacgcagac      540
tccgtacctg accccagcc tctcggacag ccaccagcag ccccctctg tctgggaact       600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga      660
gtgggtaatt cctcgggaag ttggcattgc gattccacat ggatgggcga cagagtcatc      720
accaccagca cccgaacctg ggctctgccc acctacaaca accatctgta caagcagatc      780
tccagccaat caggagccag caacgacaac cactactttg gctacagcac cccttggggg      840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca agactcatc       900
aacaacaact ggggattccg gcccaagaga ctcaacttca agctctttaa cattcaagtc      960
aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt     1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc ccggctcggc gcatcaagga     1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg     1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct     1200
cagatgcttc gtaccggaaa caactttacc ttcagctaca ccttttgagga tgttcctttc     1260
cacagcagct acgctcacag ccagagtttg gaccgtctca tgaatcctct catcgaccag     1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtccaggctt     1380
cagtttctc aggccggagc aagtgacatt cgggaccagt ctaggaactg gcttcctgga     1440
ccctgttacc gccagcagcg agtatcaaag acagctgcgg acaacaacaa cagtgaatac     1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc     1560
ccggccatgg ccagccacaa ggacgatgaa gaaagtgttt ttcctcaaag cggggttctc     1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca     1680
gacgaagagg aaatcagaac caccaatccc gtggccacgg agcagtatgg ttctgtatct     1740
accaacctcc agagcggcaa cacacaagca gctactgcag atgtcaacac acaaggcgtt     1800
cttccaggca tggtctggca ggacagagac gtgcacctgc aggggcctat ctgggcaaag     1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt tggacttaaa     1920
caccctcctc cacagattct catcaagaac accccggtac ctgcaaatcc ttcgaccacc     1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtatt ccacagggca ggtcagcgtg     2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaaccccga gatccagtac     2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat     2160
tcagagcctc gccccattgg caccagatac ctgactcgta atctgtaa              2208
```

```
<210>   210
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.52

<400>   210
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac      180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac      240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt      300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgggg aacctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga      480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac      540
tcagtacctg accccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact      600
```

```
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa tcggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta cagacaaatt    780
tccagccaat caggagcctc gaacgacaat cactactttg gctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc    960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt   1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga   1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg   1140
agcaacggga gtcaggcagt aggacgctct tcattttact gcccggagta ctttccttct   1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc   1260
cacagcagct acgctcacag ccagagtctg gaccgtctca tgaatcctct catcgaccag   1320
tacctgtatt acttgagcac aacaaacact ccaagtggaa ccaccacgca gtcaaggctt   1380
cagtttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga   1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac   1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc   1560
ccggccatgg caagccacaa ggacaatgaa gaaagttttt tcctcagag cggggttctc   1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca   1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct   1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt   1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag   1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggtggatt cggacctaaa   1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc   1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg   2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac   2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat   2160
tcagagcctc gccccattgg caccagatac ctgactcgta atttgtaa              2208
```

<210> 211
<211> 2208
<212> DNA
<213>   adeno-associated virus, serotype 2

<400> 211

```
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga     60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac    120
gacagcaggg gtcttgtgct tcctgggtac aagtacctcg gacccttcaa cggactcgac    180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa agcctacgac    240
cggcagctcg acagcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttt    300
caggagcgcc ttaaagaaga tacgtctttt gggggcaacc tcggacgagc agtcttccag    360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg    420
ggaaaaaaga ggccggtaga gcactctcct gtggagccag actcctcctc gggaaccgga    480
aaggcgggcc agcagcctgc aagaaaaaga ttgaattttg gtcagactgg agacgcagac    540
tcagtacctg acccccagcc tctcggacag ccaccagcag cccccctctgg tctgggaact    600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga    660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc    720
accaccagca cccgaacctg ggccctgccc acctacaaca accacctcta caaacaaatt    780
tccagccaat caggagcctc gaacgacaat cactactttg gctacagcac cccttggggg    840
tattttgact tcaacagatt ccactgccac ttttcaccac gtgactggca aagactcatc    900
```

```
aacaacaact ggggattccg acccaagaga ctcaacttca agctctttaa cattcaagtc      960
aaagaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt     1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga     1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg     1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct     1200
cagatgctgc gtaccggaaa caactttacc ttcagctaca cttttgagga cgttcctttc     1260
cacagcagct acgctcacag ccagagtctg gaccgtctca tgaatcctct catcgaccag     1320
tacctgtatt acttgagcag aacaaacact ccaagtggaa ccaccacgca gtcaaggctt     1380
cagttttctc aggccggagc gagtgacatt cgggaccagt ctaggaactg gcttcctgga     1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac     1500
tcgtggactg gagctaccaa gtaccacctc aatggcagag actctctggt gaatccgggc     1560
ccggccatgg caagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc     1620
atctttggga agcaaggctc agagaaaaca aatgtggaca ttgaaaaggt catgattaca     1680
gacgaagagg aaatcaggac aaccaatccc gtggctacgg agcagtatgg ttctgtatct     1740
accaacctcc agagaggcaa cagacaagca gctaccgcag atgtcaacac acaaggcgtt     1800
cttccaggca tggtctggca ggacagagat gtgtaccttc aggggcccat ctgggcaaag     1860
attccacaca cggacggaca tttttcacccc tctcccctca tgggtggatt cggacttaaa     1920
caccctcctc cacagattct catcaagaac accccggtac ctgcgaatcc ttcgaccacc     1980
ttcagtgcgg caaagtttgc ttccttcatc acacagtact ccacgggaca ggtcagcgtg     2040
gagatcgagt gggagctgca gaaggaaaac agcaaacgct ggaatcccga aattcagtac     2100
acttccaact acaacaagtc tgttaatgtg gactttactg tggacactaa tggcgtgtat     2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa                 2208
```

```
<210>   212
<211>   2208
<212>   DNA
<213>   new AAV serotype, clone hu.64

<400>   212
atggctgccg atggttatct tccagattgg ctcgaggaca ctctctctga aggaataaga       60
cagtggtgga agctcaaacc tggcccacca ccaccaaagc ccgcagagcg gcataaggac      120
gacagcaggg gtcttgtgct tcctgggtac aagtaccttg gacccttcaa cggactcgac      180
aagggagagc cggtcaacga ggcagacgcc gcggccctcg agcacgacaa ggcctacgac      240
cggcagctcg acggcggaga caacccgtac ctcaagtaca ccacgccga cgcggagttc      300
caggagcgtc ttaaagaaga tacgtctttt ggggcaacc tcggacgagc agtcttccag      360
gcgaaaaaga gggttcttga acctctgggc ctggttgagg aacctgttaa gacggctccg      420
ggaaaaaaga ggccggtaga gcactctctt gcggagccag actcctcctc gggaaccgga      480
aaagcgggcc agcagcctgc aagaaggaga ttgaatttcg gtcagactgg agacgcagac      540
tccgtacctg accccagcc tctcggacag ccaccagcag ccccctctgg tctgggaact      600
aatacgatgg ctacaggcag tggcgcacca atggcagaca ataacgaggg cgccgacgga      660
gtgggtaatt cctcgggaaa ttggcattgc gattccacat ggatgggcga cagagtcatc      720
accaccagca cccgcacctg ggctctgccc acctacaaca accacctcta caggcagatt      780
tccagccaat caggagcctc aaacgacaac cactactttg gctacagcac cccttggggg      840
tattttgact tcaacagatt ccactgccac ttttcgccac gtgactggca aagactcatc      900
aacaacaatt ggggatcccg gcccaaaaga ctcaacttca agctctttaa cattcaagtc      960
aaggaggtca cgcagaatga cggtacgacg acgattgcca ataaccttac cagcacggtt     1020
caggtgttta ctgactcgga gtaccagctc ccgtacgtcc tcggctcggc gcatcaagga     1080
tgcctcccgc cgttcccagc agacgtcttc atggtgccac agtatggata cctcaccctg     1140
aacaacggga gtcaggcagt aggacgctct tcattttact gcctggagta ctttccttct     1200
```

```
cagatgctgc gtaccggaaa caactttacc ttcagctaca cctttgagga cgttcctttc    1260
cacagcagct acgcccacag ccagagtttg gaccgtctca tgaatcctct cgtcgaccag    1320
tacctgtatt acttgagcag aacaaacact ccaagcggaa ccaccacgca gtcaaggctt    1380
cagtttctc aggccggagc aagtgacatt cgggaccagt ctaggaactg gcttcctgga    1440
ccctgttacc gccagcagcg agtatcaaag acatctgcgg ataacaacaa cagtgaatac    1500
tcgtggactg gagctaccaa gtaccacctt aatggaagag actctctggt gaatccgggc    1560
ccggccatgg ccagccacaa ggacgatgaa gaaaagtttt ttcctcagag cggggttctc    1620
atctttggaa acaagactc gggaaaaact aatgtggaca ttgaaaaggt catgattaca    1680
gacgaagagg aaatcaggac caccaatccc gtggctacgg agcagtatgg ttctgtatct    1740
accaacctcc agagcggcaa cacacaagca gctacctcag atgtcaacac acaaggcgtt    1800
cttccaggca tggtgtggca ggacagagac gtgtacctgc aggggcccat ctgggcaaag    1860
attccacaca cggacggaca ttttcacccc tctcccctca tgggcggatt cggacttaaa    1920
caccctcccc cgcagattct catcaagaac accccggtac ctgcgaatcc ttcgactacc    1980
ttcagtgcgg caaagtttgc ttccttcatt acacagtact ccacggggca ggtcagcgtg    2040
gagatcgagt gggagctgca gaaggagaac agcaaacgct ggaatcccga gattcagtac    2100
acttccaact acaacaaatc tgttaatgtg gactttactg tggacactaa tggtgtgtat    2160
tcagagcctc gcccccattgg caccagatac ctgactcgta atctgtaa              2208
```

```
<210>   213
<211>   2214
<212>   DNA
<213>   adeno-associated virus, serotype 7

<400>   213
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc     60
gagtggtggg acctgaaacc tggagccccg aaacccaaag ccaaccagca aaagcaggac    120
aacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180
aaggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240
cagcagctca aagcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt    300
caggagcgtc tgcaagaaga tacgtcattt gggggcaacc tcgggcgagc agtcttccag    360
gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggtcct    420
gcaaagaaga ccggtagaa gccgtcacct cagcgttccc ccgactcctc cacgggcatc    480
ggcaagaaag gccagcagcc cgccagaaag agactcaatt tcggtcagac tggcgactca    540
gagtcagtcc ccgaccctca acctctcgga gaacctccag cagcgccctc tagtgtggga    600
tctggtacag tggctgcagg cggtggcgca ccaatggcag acaataacga aggtgccgac    660
ggagtgggta atgcctcagg aaattggcat gcgattccac atggctgggg cgacagagtc    720
attaccacca gcacccgaac ctgggccctg cccacctaca caaccaccct ctacaagcaa    780
atctccagtg aaactgcagg tagtaccaac gacaacacct acttcggcta cagcaccccc    840
tggggtatt ttgactttaa cagattccac tgccacttct caccacgtga ctggcagcga    900
ctcatcaaca caactgggg attccggccc aagaagctgc ggttcaagct cttcaacatc    960
caggtcaagg aggtcacgac gaatgacggc gttacgacca tcgctaataa ccttaccagc    1020
acgattcagg tattctcgga ctcggaatac cagctgccgt acgtcctcgg ctctgcgcac    1080
cagggctgcc tgcctccgtt cccggcggac gtcttcatga ttcctcagta cggctacctg    1140
actctcaaca atggcagtca gtctgtggga cgttcctcct ctactgcct ggagtacttc    1200
ccctctcaga tgctgagaac gggcaacaac tttgagttca gctacagctt cgaggacgtg    1260
cctttccaca gcagctacgc acacagccag agcctggacc ggctgatgaa tcccctcatc    1320
gaccagtact tgtactacct ggccagaaca cagagtaacc aggaggcac agctggcaat    1380
cgggaactgc agttttacca gggcggggcct tcaactatgg ccgaacaagc caagaattgg    1440
ttacctggac cttgcttccg gcaacaaaga gtctccaaaa cgctggatca aaacaacaac    1500
```

```
agcaactttg cttggactgg tgccaccaaa tatcacctga acggcagaaa ctcgttggtt    1560

aatcccggcg tcgccatggc aactcacaag gacgacgagg accgcttttt cccatccagc    1620

ggagtcctga tttttggaaa aactggagca actaacaaaa ctacattgga aaatgtgtta    1680

atgacaaatg aagaagaaat tcgtcctact aatcctgtag ccacggaaga atacgggata    1740

gtcagcagca acttacaagc ggctaatact gcagcccaga cacaagttgt caacaaccag    1800

ggagccttac ctggcatggt ctggcagaac cgggacgtgt acctgcaggg tcccatctgg    1860

gccaagattc ctcacacgga tggcaacttt cacccgtctc cttttgatggg cggctttgga    1920

cttaaacatc cgcctcctca gatcctgatc aagaacactc ccgttcccgc taatcctccg    1980

gaggtgttta ctcctgccaa gtttgcttcg ttcatcacac agtacagcac cggacaagtc    2040

agcgtggaaa tcgagtggga gctgcagaag gaaaacagca agcgctggaa cccgggagatt   2100

cagtacacct ccaactttga aaagcagact ggtgtggact ttgccgttga cagccagggt    2160

gtttactctg agcctcgccc tattggcact cgttacctca cccgtaatct gtaa           2214
```

```
<210>  214
<211>  2217
<212>  DNA
<213>  adeno-associated virus, serotype 8

<400>  214
atggctgccg atggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc    60

gagtggtggg cgctgaaacc tggagccccg aagcccaaag ccaaccagca aaagcaggac    120

gacggccggg gtctggtgct tcctggctac aagtacctcg gacccttcaa cggactcgac    180

aaggggggagc ccgtcaacgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac    240

cagcagctgc aggcgggtga caatccgtac ctgcggtata accacgccga cgccgagttt    300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag    360

gccaagaagc gggttctcga acctctcggt ctggttgagg aaggcgctaa gacggctcct    420

ggaaagaaga gaccggtaga gccatcaccc cagcgttctc cagactcctc tacgggcatc    480

ggcaagaaag gccaacagcc cgccagaaaa agactcaatt ttggtcagac tggcgactca    540

gagtcagttc cagaccctca acctctcgga gaacctccag cagcgccctc tggtgtggga    600

cctaatacaa tggctgcagg cggtggcgca ccaatggcag acaataacga aggcgccgac    660

ggagtgggta gttcctcggg aaattggcat gcgattccca catggctggg cgacagagtc    720

atcaccacca gcacccgaac ctgggcctg cccaccatca acaaccacct ctacaagcaa    780

atctccaacg gacatcgggg aggagccacc aacgacaaca cctacttcgg ctacagcacc    840

ccctggggt attttgactt aaacagattc cactgccact ttTccaccg tgactggcag    900

cgactcatca acaacaactg gggattccgg cccaagagac tcagcttcaa gctcttcaac    960

atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taacctcacc    1020

agcaccatcc aggtgtttac ggactcggag taccagctgc cgtacgttct cggctctgcc    1080

caccagggct gcctgcctcc gttcccggcg gacgtgttca tgattcccca gtacggctac    1140

ctaacactca acaacggtag tcaggccgtg ggacgctcct ccttctactg cctggaatac    1200

tttccttcgc agatgctgag aaccggcaac aacttccagt ttacttacac cttcgaggac    1260

gtgccttttcc acagcagcta cgcccacagc cagagcttgg accggctgat gaatcctctg    1320

attgaccagt acctgtacta cttgtctcgg actcaaacaa caggaggcac ggcaaatacg    1380

cagactctgg gcttcagcca aggtgggcct aatacaatgg ccaatcaggc aaagaactgg    1440

ctgccaggac cctgttaccg ccaacaacgc gtctcaacga caaccgggca aaacaacaat    1500

agcaactttg cctggactgc tgggaccaaa taccatctga atggaagaaa ttcattggct    1560

aatcctggca tcgctatggc aacacacaaa gacgacgagg agcgtttttt tcccagtaac    1620

gggatcctga tttttggcaa acaaaatgct gccagagaca tgcggattta cagcgatgtc    1680

atgctcacca gcgaggaaga aatcaaaacc actaaccctg tggctacaga ggaataacggt    1740

atcgtggcag ataacttgca gcagcaaaac acggctcctc aaattggaac tgtcaacagc    1800
```

```
cagggggcct tacccggtat ggtctggcag aaccgggacg tgtacctgca gggtcccatc      1860

tgggccaaga ttcctcacac ggacggcaac ttccacccgt ctccgctgat gggcggcttt      1920

ggcctgaaac atcctccgcc tcagatcctg atcaagaaca cgcctgtacc tgcggatcct      1980

ccgaccacct tcaaccagtc aaagctgaac tctttcatca cgcaatacag caccggacag      2040

gtcagcgtgg aaattgaatg ggagctgcag aaggaaaaca gcaagcgctg gaaccccgag      2100

atccagtaca cctccaacta ctacaaatct acaagtgtgg actttgctgt taatacagaa      2160

ggcgtgtact ctgaaccccg ccccattggc acccgttacc tcacccgtaa tctgtaa        2217
```

```
<210>   215
<211>   2217
<212>   DNA
<213>   new AAV serotype, clone hu.67

<400>   215
atggctgctg acggttatct tccagattgg ctcgaggaca acctctctga gggcattcgc       60

gagtggtggg acctgaaacc tggagccccc aagcccaagg ccaaccagca gaagcaggac      120

gacggccggg gtctggtgct tcttggctac aagtacctcg gacccttcaa cggactcgac      180

aaggggagc ccgtcaatgc ggcggacgca gcggccctcg agcacgacaa ggcctacgac        240

cagcagctca aagcgggtga caatccgtac ctgcggtata ccacgccga cgccgagttt        300

caggagcgtc tgcaagaaga tacgtctttt gggggcaacc tcgggcgagc agtcttccag      360

gccaagaagc gggttctcga acctctcggt ctggttgagg aagctgctaa gacggctcct      420

ggaaagaaga gaccggtaga accgtcacct cagcgttccc ccgactcctc cacgggcatc      480

ggcaagaaag gccagcagcc cgctaaaaag agactgaact ttggtcagac tggcgactca      540

gagtcagtcc ccgaccctca accaatcgga gaaccaccag caggccctc tggtctggga      600

tctggtacaa tggctgcagg cggtggcgct ccaatggcag acaataacga aggcgccgac      660

ggagtgggta gttcctcagg aaattggcat tgcgattcca catggctggg cgacagagtc      720

atcaccacca gcacccgaac ctgggcccctg cccacctaca caaccacct ctacaagcaa       780

atatccaatg gacatcgggg aggaagcacc aacgacaaca cctacttcgg ctacagcacc      840

ccctgggggt attttgactt caacagattc cactgccact tctcaccacg tgactggcag      900

cgactcatca caacaactg gggattccgg ccaaaaagac tcagcttcaa gctcttcaac       960

atccaggtca aggaggtcac gcagaatgaa ggcaccaaga ccatcgccaa taaccttacc     1020

agcacgattc aggtatttac ggactcggaa taccagctgc cgtacgtcct cggctccgcg      1080

caccagggct gcctgcctcc gttcccggcg gacgtcttca tgattcccca gtacggctac      1140

cttacactga caatggaag tcaagccgta ggccgttcct ccttctactg cctggaatat      1200

tttccatctc aaatgctgcg aactggaaac aattttgaat tcagctacac cttcgaggac     1260

gtgcctttcc acagcggcta cgcacacagc cagagcttgg accgactgat gaatcctctc      1320

atcgaccagt acctgtacta cttatccaga actcagtcca caggaggaac tcaaggtacc      1380

cagcaattgt tattttctca agctgggcct gcaaacatgt cggctcaggc taagaactgg      1440

ctacctggac cttgctaccg gcagcagcga gtctctacga cactgtcgca aaacaacaac      1500

agcaactttg cttggactgg tgccaccaaa tatcacctga acggaagaga ctctttggta     1560

aatcccggtg tcgccatggc aacccacaag gacgacgagg aacgcttctt cccgtcgagt     1620

ggagtcctga tgtttggaaa acagggtgct ggaagagaca atgtggacta cagcagcgtt      1680

atgctaacca gcgaagaaga aattaaaacc actaaccctg tagccacaga acaatacggt     1740

gtggtggctg acaacttgca gcaaccaat acagggccta ttgtgggaaa tgtcaacagc      1800

caaggagcct tacctggcat ggtctggcag aaccgagacg tgtacctgca gggtcccatc     1860

tgggccaaga ttcctcacac ggacggcaac ttccacccctt caccgctaat gggaggattt    1920

ggactgaagc acccacctcc tcagatcctg atcaagaaca cgccggtacc tgcggatcct     1980

ccaacgacgt tcagccaggc gaaattggct tccttcatta cgcagtacag caccggacag     2040

gtcagcgtgg aaatcgagtg ggagctgcag aaggagaaca gcaaacgctg gaacccagag     2100
```

attcagtaca cttcaaacta ctacaaatct acaaatgtgg actttgctgt caatacagag   2160

ggaacttatt ctgagcctcg ccccattggt actcgttacc tcacccgtaa tctgtaa   2217

<210> 216
<211> 724
<212> PRT
<213> vp1, serotype 5

<400> 216

Met Ser Phe Val Asp His Pro Pro Asp Trp Leu Glu Glu Val Gly Glu
1   5   10   15

Gly Leu Arg Glu Phe Leu Gly Leu Glu Ala Gly Pro Pro Lys Pro Lys
            20   25   30

Pro Asn Gln Gln His Gln Asp Gln Ala Arg Gly Leu Val Leu Pro Gly
        35   40   45

Tyr Asn Tyr Leu Gly Pro Gly Asn Gly Leu Asp Arg Gly Glu Pro Val
    50   55   60

Asn Arg Ala Asp Glu Val Ala Arg Glu His Asp Ile Ser Tyr Asn Glu
65   70   75   80

Gln Leu Glu Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
                85   90   95

Ala Glu Phe Gln Glu Lys Leu Ala Asp Asp Thr Ser Phe Gly Gly Asn
            100   105   110

Leu Gly Lys Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Phe
        115   120   125

Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Thr Gly Lys Arg Ile
    130   135   140

Asp Asp His Phe Pro Lys Arg Lys Lys Ala Arg Thr Glu Glu Asp Ser
145   150   155   160

Lys Pro Ser Thr Ser Ser Asp Ala Glu Ala Gly Pro Ser Gly Ser Gln
                165   170   175

Gln Leu Gln Ile Pro Ala Gln Pro Ala Ser Ser Leu Gly Ala Asp Thr
            180   185   190

Met Ser Ala Gly Gly Gly Gly Pro Leu Gly Asp Asn Asn Gln Gly Ala
        195   200   205

Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys Asp Ser Thr Trp
    210   215   220

Met Gly Asp Arg Val Val Thr Lys Ser Thr Arg Thr Trp Val Leu Pro
225   230   235   240

Ser Tyr Asn Asn His Gln Tyr Arg Glu Ile Lys Ser Gly Ser Val Asp
                245   250   255

Gly Ser Asn Ala Asn Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr
            260   265   270

Phe Asp Phe Asn Arg Phe His Ser His Trp Ser Pro Arg Asp Trp Gln
        275   280   285

Arg Leu Ile Asn Asn Tyr Trp Gly Phe Arg Pro Arg Ser Leu Arg Val
    290   295   300

Lys Ile Phe Asn Ile Gln Val Lys Glu Val Thr Val Gln Asp Ser Thr
305   310   315   320

Page 321

Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp
            325   330   335

Asp Asp Tyr Gln Leu Pro Tyr Val Val Gly Asn Gly Thr Glu Gly Cys
            340   345   350

Leu Pro Ala Phe Pro Pro Gln Val Phe Thr Leu Pro Gln Tyr Gly Tyr
            355   360   365

Ala Thr Leu Asn Arg Asp Asn Thr Glu Asn Pro Thr Glu Arg Ser Ser
        370   375   380

Phe Phe Cys Leu Glu Tyr Phe Pro Ser Lys Met Leu Arg Thr Gly Asn
385   390   395   400

Asn Phe Glu Phe Thr Tyr Asn Phe Glu Glu Val Pro Phe His Ser Ser
                405   410   415

Phe Ala Pro Ser Gln Asn Leu Phe Lys Leu Ala Asn Pro Leu Val Asp
            420   425   430

Gln Tyr Leu Tyr Arg Phe Val Ser Thr Asn Asn Thr Gly Gly Val Gln
            435   440   445

Phe Asn Lys Asn Leu Ala Gly Arg Tyr Ala Asn Thr Tyr Lys Asn Trp
    450   455   460

Phe Pro Gly Pro Met Gly Arg Thr Gln Gly Trp Asn Leu Gly Ser Gly
465   470   475   480

Val Asn Arg Ala Ser Val Ser Ala Phe Ala Thr Thr Asn Arg Met Glu
            485   490   495

Leu Glu Gly Ala Ser Tyr Gln Val Pro Pro Gln Pro Asn Gly Met Thr
            500   505   510

Asn Asn Leu Gln Gly Ser Asn Thr Tyr Ala Leu Glu Asn Thr Met Ile
            515   520   525

Phe Asn Ser Gln Pro Ala Asn Pro Gly Thr Thr Ala Thr Tyr Leu Glu
            530   535   540

Gly Asn Met Leu Ile Thr Ser Glu Ser Glu Thr Gln Pro Val Asn Arg
545   550   555   560

Val Ala Tyr Asn Val Gly Gly Gln Met Ala Thr Asn Asn Gln Ser Ser
            565   570   575

Thr Thr Ala Pro Ala Thr Gly Thr Tyr Asn Leu Gln Glu Ile Val Pro
            580   585   590

Gly Ser Val Trp Met Glu Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
            595   600   605

Ala Lys Ile Pro Glu Thr Gly Ala His Phe His Pro Ser Pro Ala Met
    610   615   620

Gly Gly Phe Gly Leu Lys His Pro Pro Met Met Leu Ile Lys Asn
625   630   635   640

Thr Pro Val Pro Gly Asn Ile Thr Ser Phe Ser Asp Val Pro Val Ser
            645   650   655

Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Thr Val Glu Met Glu
            660   665   670

Trp Glu Leu Lys Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln

```
            675                    680                    685
```

Tyr Thr Asn Asn Tyr Asn Asp Pro Gln Phe Val Asp Phe Ala Pro Asp
    690   695   700

Ser Thr Gly Glu Tyr Arg Thr Thr Arg Pro Ile Gly Thr Arg Tyr Leu
705   710   715   720

Thr Arg Pro Leu

<210> 217
<211> 736
<212> PRT
<213> vp1, serotype 3-3

<400> 217

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Val Pro Gln Pro
            20   25   30

Lys Ala Asn Gln Gln His Gln Asp Asn Arg Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Ile Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Gly
    130   135   140

Ala Val Asp Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Val Gly
145   150   155   160

Lys Ser Gly Lys Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Ala Pro Thr Ser Leu Gly Ser Asn Thr Met Ala Ser Gly Gly Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His

```
                    275                      280                    285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290                 295                 300

Gly Phe Arg Pro Lys Lys Leu Ser Phe Lys Leu Phe Asn Ile Gln Val
305                 310                 315                 320

Arg Gly Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                 330                 335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340                 345                 350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355                 360                 365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370                 375                 380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385                 390                 395                 400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
                405                 410                 415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420                 425                 430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg Thr
        435                 440                 445

Gln Gly Thr Thr Ser Gly Thr Thr Asn Gln Ser Arg Leu Leu Phe Ser
    450                 455                 460

Gln Ala Gly Pro Gln Ser Met Ser Leu Gln Ala Arg Asn Trp Leu Pro
465                 470                 475                 480

Gly Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Thr Ala Asn Asp Asn
                485                 490                 495

Asn Asn Ser Asn Phe Pro Trp Thr Ala Ala Ser Lys Tyr His Leu Asn
            500                 505                 510

Gly Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys
            515                 520                 525

Asp Asp Glu Glu Lys Phe Phe Pro Met His Gly Asn Leu Ile Phe Gly
    530                 535                 540

Lys Glu Gly Thr Thr Ala Ser Asn Ala Glu Leu Asp Asn Val Met Ile
545                 550                 555                 560

Thr Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln
                565                 570                 575

Tyr Gly Thr Val Ala Asn Asn Leu Gln Ser Ser Asn Thr Ala Pro Thr
            580                 585                 590

Thr Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln
        595                 600                 605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610                 615                 620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630                 635                 640
```

Page 324

... Lys His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala
            645   650   655

Asn Pro Pro Thr Thr Phe Ser Pro Ala Lys Phe Ala Ser Phe Ile Thr
        660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
        690   695   700

Tyr Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val
705   710   715   720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725   730   735

<210> 218
<211> 734
<212> PRT
<213> vp1, serotype 4-4

<400> 218

Met Thr Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser Glu
1   5   10   15

Gly Val Arg Glu Trp Trp Ala Leu Gln Pro Gly Ala Pro Lys Pro Lys
        20   25   30

Ala Asn Gln Gln His Gln Asp Asn Ala Arg Gly Leu Val Leu Pro Gly
        35   40   45

Tyr Lys Tyr Leu Gly Pro Gly Asn Gly Leu Asp Lys Gly Glu Pro Val
    50   55   60

Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp Gln
65   70   75   80

Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
            85   90   95

Ala Glu Phe Gln Gln Arg Leu Gln Gly Asp Thr Ser Phe Gly Gly Asn
        100   105   110

Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Leu
        115   120   125

Gly Leu Val Glu Gln Ala Gly Glu Thr Ala Pro Gly Lys Lys Arg Pro
        130   135   140

Leu Ile Glu Ser Pro Gln Gln Pro Asp Ser Ser Thr Gly Ile Gly Lys
145   150   155   160

Lys Gly Lys Gln Pro Ala Lys Lys Lys Leu Val Phe Glu Asp Glu Thr
            165   170   175

Gly Ala Gly Asp Gly Pro Pro Glu Gly Ser Thr Ser Gly Ala Met Ser
        180   185   190

Asp Asp Ser Glu Met Arg Ala Ala Ala Gly Gly Ala Ala Val Glu Gly
        195   200   205

Gly Gln Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys
        210   215   220

Asp Ser Thr Trp Ser Glu Gly His Val Thr Thr Thr Ser Thr Arg Thr
225   230   235   240

Trp Val Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Arg Leu Gly Glu
                245   250   255

Ser Leu Gln Ser Asn Thr Tyr Asn Gly Phe Ser Thr Pro Trp Gly Tyr
            260   265   270

Phe Asp Phe Asn Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln
        275   280   285

Arg Leu Ile Asn Asn Asn Trp Gly Met Arg Pro Lys Ala Met Arg Val
    290   295   300

Lys Ile Phe Asn Ile Gln Val Lys Glu Val Thr Thr Ser Asn Gly Glu
305   310   315   320

Thr Thr Val Ala Asn Asn Leu Thr Ser Thr Val Gln Ile Phe Ala Asp
                325   330   335

Ser Ser Tyr Glu Leu Pro Tyr Val Met Asp Ala Gly Gln Glu Gly Ser
            340   345   350

Leu Pro Pro Phe Pro Asn Asp Val Phe Met Val Pro Gln Tyr Gly Tyr
            355   360   365

Cys Gly Leu Val Thr Gly Asn Thr Ser Gln Gln Gln Thr Asp Arg Asn
    370   375   380

Ala Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg Thr Gly
385   390   395   400

Asn Asn Phe Glu Ile Thr Tyr Ser Phe Glu Lys Val Pro Phe His Ser
            405   410   415

Met Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro Leu Ile
        420   425   430

Asp Gln Tyr Leu Trp Gly Leu Gln Ser Thr Thr Thr Gly Thr Thr Leu
        435   440   445

Asn Ala Gly Thr Ala Thr Thr Asn Phe Thr Lys Leu Arg Pro Thr Asn
    450   455   460

Phe Ser Asn Phe Lys Lys Asn Trp Leu Pro Gly Pro Ser Ile Lys Gln
465   470   475   480

Gln Gly Phe Ser Lys Thr Ala Asn Gln Asn Tyr Lys Ile Pro Ala Thr
            485   490   495

Gly Ser Asp Ser Leu Ile Lys Tyr Glu Thr His Ser Thr Leu Asp Gly
            500   505   510

Arg Trp Ser Ala Leu Thr Pro Gly Pro Pro Met Ala Thr Ala Gly Pro
    515   520   525

Ala Asp Ser Lys Phe Ser Asn Ser Gln Leu Ile Phe Ala Gly Pro Lys
    530   535   540

Gln Asn Gly Asn Thr Ala Thr Val Pro Gly Thr Leu Ile Phe Thr Ser
545   550   555   560

Glu Glu Glu Leu Ala Ala Thr Asn Ala Thr Asp Thr Asp Met Trp Gly
            565   570   575

Asn Leu Pro Gly Gly Asp Gln Ser Asn Ser Asn Leu Pro Thr Val Asp
            580   585   590

Arg Leu Thr Ala Leu Gly Ala Val Pro Gly Met Val Trp Gln Asn Arg
    595   600   605

Page 326

```
Asp Ile Tyr Tyr Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp
    610             615             620
```

```
Gly His Phe His Pro Ser Pro Leu Ile Gly Gly Phe Gly Leu Lys His
625             630             635             640
```

```
Pro Pro Pro Gln Ile Phe Ile Lys Asn Thr Pro Val Pro Ala Asn Pro
                645             650             655
```

```
Ala Thr Thr Phe Ser Ser Thr Pro Val Asn Ser Phe Ile Thr Gln Tyr
            660             665             670
```

```
Ser Thr Gly Gln Val Ser Val Gln Ile Asp Trp Glu Ile Gln Lys Glu
        675             680             685
```

```
Arg Ser Lys Arg Trp Asn Pro Glu Val Gln Phe Thr Ser Asn Tyr Gly
    690             695             700
```

```
Gln Gln Asn Ser Leu Leu Trp Ala Pro Asp Ala Ala Gly Lys Tyr Thr
705             710             715             720
```

```
Glu Pro Arg Ala Ile Gly Thr Arg Tyr Leu Thr His His Leu
                725             730
```

```
<210>   219
<211>   736
<212>   PRT
<213>   vp1, serotype 1

<400>   219
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15
```

```
Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30
```

```
Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45
```

```
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

```
Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80
```

```
Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85              90              95
```

```
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110
```

```
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125
```

```
Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140
```

```
Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145             150             155             160
```

```
Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165             170             175
```

```
Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180             185             190
```

```
Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
    195             200             205
```

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
            260   265   270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
        275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
            325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
        340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
        355   360   365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385   390   395   400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
            405   410   415

Glu Glu Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
        420   425   430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
    435   440   445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
450   455   460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
            485   490   495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
            500   505   510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
        515   520   525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530   535   540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545   550   555   560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
            565   570   575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
            580   585   590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
            595   600   605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
    610   615   620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625   630   635   640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645   650   655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
            660   665   670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
    675   680   685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
    690   695   700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705   710   715   720

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                725   730   735

<210>   220
<211>   736
<212>   PRT
<213>   vp1, serotype 6

<400>   220

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Phe Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Page 329

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
            260   265   270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
            275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
            325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
            340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala
            355   360   365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370   375   380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385   390   395   400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
                405   410   415

Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp
            420   425   430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
            435   440   445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe Ser
            450   455   460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
            485   490   495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
            500   505   510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
            515   520   525

Asp Asp Lys Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
                        Page 330

```
        530                535                    540

    Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
    545                550                555                560

    Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
                    565                570                575

    Phe Gly Thr Val Ala Val Asn Leu Gln Ser Ser Ser Thr Asp Pro Ala
                    580                585                590

    Thr Gly Asp Val His Val Met Gly Ala Leu Pro Gly Met Val Trp Gln
                595                600                605

    Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
        610                615                620

    Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
    625                630                635                640

    Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                    645                650                655

    Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
                    660                665                670

    Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
                675                680                685

    Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
        690                695                700

    Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
    705                710                715                720

    Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                    725                730                735
```

```
<210>    221
<211>    735
<212>    PRT
<213>    vp1, serotype 2

<400>    221

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1                5                10                15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
                20                25                30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
            35                40                45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50                55                60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                70                75                80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                90                95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
                100                105                110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                120                125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
```

```
              130                135                140

Pro Val Glu His Ser Pro Val Glu Pro Asp Ser Ser Ser Gly Thr Gly
145                150                155                160

Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
                    165                170                175

Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
                180                185                190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
            195                200                205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
        210                215                220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225                230                235                240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245                250                255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
                260                265                270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
            275                280                285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290                295                300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305                310                315                320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                325                330                335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
                340                345                350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355                360                365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370                375                380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385                390                395                400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
                405                410                415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
                420                425                430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Arg Thr
            435                440                445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450                455                460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465                470                475                480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
                485                490                495
```

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
        515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Ser Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
                565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Arg Gly Asn Arg Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
                645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730   735

<210> 222
<211> 737
<212> PRT
<213> vp1, serotype 7

<400> 222

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asn Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

```
Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Ala Lys Lys Arg
    130             135              140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro
            180             185             190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Val Ala Ala Gly Gly
            195             200             205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210             215             220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225             230             235             240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245             250             255

Leu Tyr Lys Gln Ile Ser Ser Glu Thr Ala Gly Ser Thr Asn Asp Asn
            260             265             270

Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275             280             285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290             295             300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Arg Phe Lys Leu Phe Asn Ile
305             310             315             320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
                325             330             335

Asn Leu Thr Ser Thr Ile Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340             345             350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
            355             360             365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370             375             380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385             390             395             400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr Ser
            405             410             415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420             425             430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
    435             440             445

Arg Thr Gln Ser Asn Pro Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450             455             460
```

```
Phe Tyr Gln Gly Gly Pro Ser Thr Met Ala Glu Gln Ala Lys Asn Trp
465             470             475             480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
                485             490             495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500             505             510

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515             520             525

His Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530             535             540

Phe Gly Lys Thr Gly Ala Thr Asn Lys Thr Thr Leu Glu Asn Val Leu
545             550             555             560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
                565             570             575

Glu Tyr Gly Ile Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
            580             585             590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
    595             600             605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610             615             620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625             630             635             640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
                645             650             655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
            660             665             670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
            675             680             685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690             695             700

Asn Phe Glu Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705             710             715             720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
                725             730             735

Leu
```

```
<210>   223
<211>   738
<212>   PRT
<213>   vp1, serotype 8

<400>   223
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1               5               10              15

Glu Gly Ile Arg Glu Trp Trp Ala Leu Lys Pro Gly Ala Pro Lys Pro
                20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
    35              40              45
```

```
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Gln Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
            165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro
        180             185             190

Pro Ala Ala Pro Ser Gly Val Gly Pro Asn Thr Met Ala Ala Gly Gly
        195             200             205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210             215             220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225             230             235             240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245             250             255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ala Thr Asn Asp
        260             265             270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275             280             285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290             295             300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305             310             315             320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325             330             335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340             345             350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
    355             360             365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370             375             380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385             390             395             400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Thr Tyr
            405             410             415
```

Page 336

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Thr Thr Gly Gly Thr Ala Asn Thr Gln Thr Leu Gly
    450   455   460

Phe Ser Gln Gly Gly Pro Asn Thr Met Ala Asn Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Thr Gly
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Ala Gly Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asn Ser Leu Ala Asn Pro Gly Ile Ala Met Ala Thr
            515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Asn Gly Ile Leu Ile
    530   535   540

Phe Gly Lys Gln Asn Ala Ala Arg Asp Asn Ala Asp Tyr Ser Asp Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Glu Tyr Gly Ile Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580   585   590

Pro Gln Ile Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Asn Gln Ser Lys Leu Asn Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Ser Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu

<210>   224
<211>   736
<212>   PRT
<213>   vp1, modified hu.46

<400> 224

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
                165   170   175

Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180   185   190

Ala Thr Pro Ala Ala Val Gly Pro Thr Thr Met Ala Ser Gly Gly Gly
            195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
                245   250   255

Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn His
            260   265   270

Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe
            275   280   285

His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn
    290   295   300

Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln
305   310   315   320

Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn
                325   330   335

Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro
            340   345   350

Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala

Page 338

```
                  355                    360                    365

Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly
    370                 375                 380

Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro
385                 390                 395                 400

Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe
              405                 410                 415

Glu Glu Val Pro Leu His Ser Ser Cys Ala His Ser Gln Ser Leu Asp
              420                 425                 430

Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Arg
        435                 440                 445

Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Arg Asp Leu Leu Phe Ser
    450                 455                 460

Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu Pro
465                 470                 475                 480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp Asn
              485                 490                 495

Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu Asn
              500                 505                 510

Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His Lys
        515                 520                 525

Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe Gly
    530                 535                 540

Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met Ile
545                 550                 555                 560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Arg
              565                 570                 575

Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro Ala
        580                 585                 590

Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp Gln
    595                 600                 605

Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
610                 615                 620

Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630                 635                 640

Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
              645                 650                 655

Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile Thr
        660                 665                 670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675                 680                 685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser Asn
    690                 695                 700

Tyr Ala Lys Ser Ala Asn Val Asp Phe Thr Val Asp Asn Asn Gly Leu
705                 710                 715                 720
```

Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
                  725   730   735

<210>   225
<211>   735
<212>   PRT
<213>   vp1, modified hu.29

<400>   225

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20   25   30

Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145   150   155   160

Lys Ser Gly Asn Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165   170   175

Gly Asp Ser Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180   185   190

Ala Ala Pro Ser Gly Leu Gly Thr Asn Thr Met Ala Thr Gly Ser Gly
        195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245   250   255

Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Page 340

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
                    325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
        355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Leu Ser Arg Thr
        435   440   445

Asn Thr Pro Ser Gly Thr Thr Thr Gln Ser Arg Leu Gln Phe Ser Gln
    450   455   460

Ala Gly Ala Ser Asp Ile Arg Asp Gln Ser Arg Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Ser Ala Asp Asn Asn
            485   490   495

Asn Ser Glu Tyr Ser Trp Thr Gly Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
            515   520   525

Asp Glu Glu Lys Phe Phe Pro Gln Ser Gly Val Leu Ile Phe Gly Lys
        530   535   540

Gln Gly Pro Glu Lys Thr Asn Val Asp Ile Glu Lys Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Ser Val Ser Thr Asn Leu Gln Ser Gly Asn Thr Gln Ala Ala Thr
            580   585   590

Ala Asp Val Asn Thr Gln Gly Val Leu Pro Gly Met Val Trp Gln Asp
        595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
        610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Ser Thr Thr Phe Ser Ala Ala Lys Phe Ala Ser Phe Ile Thr Gln
            660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
    675   680   685

Page 341

```
Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690             695             700
```

```
Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705             710             715             720
```

```
Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 226
<211> 735
<212> PRT
<213> vp1, modified hu.7

<400> 226

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1               5               10              15
```

```
Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
            20              25              30
```

```
Lys Pro Ala Glu Arg His Lys Asp Asp Ser Arg Gly Leu Val Leu Pro
        35              40              45
```

```
Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60
```

```
Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80
```

```
Arg Gln Leu Asp Ser Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85              90              95
```

```
Asp Ala Glu Phe Gln Glu Arg Leu Lys Glu Asp Thr Ser Phe Gly Gly
            100             105             110
```

```
Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125
```

```
Leu Gly Leu Val Glu Pro Pro Val Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140
```

```
Pro Val Glu His Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Thr Gly
145             150             155             160
```

```
Lys Ala Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175
```

```
Gly Asp Ala Asp Ser Val Pro Asp Pro Gln Pro Leu Gly Gln Pro Pro
            180             185             190
```

```
Ala Ala Pro Ser Gly Leu Gly Ser Thr Thr Met Ala Thr Gly Ser Gly
        195             200             205
```

```
Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220
```

```
Ser Gly Asn Trp His Cys Asp Ser Gln Trp Leu Gly Asp Arg Val Ile
225             230             235             240
```

```
Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255
```

```
Tyr Lys Gln Ile Ser Ser Gln Ser Gly Ala Ser Asn Asp Asn His Tyr
            260             265             270
```

```
Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
    275             280             285
```

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
    290   295   300

Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305   310   315   320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325   330   335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340   345   350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355   360   365

Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370   375   380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385   390   395   400

Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr Phe Glu
            405   410   415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420   425   430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn Lys Thr
    435   440   445

Gln Ser Asn Ser Gly Thr Leu Gln Gln Ser Arg Leu Leu Phe Ser Gln
    450   455   460

Ala Gly Pro Thr Ser Met Ser Leu Gln Ala Lys Asn Trp Leu Pro Gly
465   470   475   480

Pro Cys Tyr Arg Gln Gln Arg Leu Ser Lys Gln Ala Asn Asp Asn Asn
            485   490   495

Asn Ser Asn Phe Pro Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly
            500   505   510

Arg Asp Ser Leu Val Asn Pro Gly Pro Ala Met Ala Ser His Lys Asp
    515   520   525

Asp Glu Glu Lys Phe Phe Pro Met His Gly Thr Leu Ile Phe Gly Lys
    530   535   540

Gln Gly Thr Asn Ala Asn Asp Ala Asp Leu Asp Asn Val Met Ile Thr
545   550   555   560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565   570   575

Gly Tyr Val Ser Asn Asn Leu Gln Asn Ser Asn Thr Gly Pro Thr Thr
            580   585   590

Gly Thr Val Asn His Gln Gly Ala Leu Pro Gly Met Val Trp Gln Asp
    595   600   605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610   615   620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625   630   635   640

His Pro Pro Pro Gln Ile Met Ile Lys Asn Thr Pro Val Pro Ala Asn
            645   650   655

Pro Pro Thr Asn Phe Ser Ser Ala Lys Phe Ala Ser Phe Ile Thr Gln
        660   665   670

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675   680   685

Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690   695   700

Asn Lys Ser Val Asn Val Asp Phe Thr Val Asp Thr Asn Gly Val Tyr
705   710   715   720

Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725   730   735

<210>   227
<211>   728
<212>   PRT
<213>   vp1, modified cy.5

<400>   227

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
        20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Arg Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Glu Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Lys Gln Leu Glu Gln Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
        100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Ile Glu Ser Pro Asp Ser Ser Thr Gly Ile Gly Lys Asn Gly Gln
145   150   155   160

Pro Pro Ala Lys Lys Lys Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu
            165   170   175

Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro Ala Ala Pro Ser
        180   185   190

Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala
        195   200   205

Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp
    210   215   220

His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr
225   230   235   240

Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile
            245   250   255

Page 344

Ser Ser Gln Ser Gly Ala Thr Asn Asp Asn His Phe Phe Gly Tyr Ser
            260   265   270

Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser
        275   280   285

Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro
    290   295   300

Arg Lys Leu Arg Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr
305   310   315   320

Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Ile
            325   330   335

Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser
        340   345   350

Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile
        355   360   365

Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ser Val Gly
    370   375   380

Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg
385   390   395   400

Thr Gly Asn Asn Phe Glu Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe
            405   410   415

His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro
        420   425   430

Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala Arg Thr Gln Ser Thr Thr
    435   440   445

Gly Ser Thr Arg Glu Leu Gln Phe His Gln Ala Gly Pro Asn Thr Met
    450   455   460

Ala Glu Gln Ser Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln
465   470   475   480

Arg Leu Ser Lys Asn Ile Asp Ser Asn Asn Asn Ser Asn Phe Ala Trp
            485   490   495

Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Thr Asn
        500   505   510

Pro Gly Val Ala Met Ala Thr Asn Lys Asp Asp Glu Asp Gln Phe Phe
    515   520   525

Pro Ile Asn Gly Val Leu Val Phe Gly Lys Thr Gly Ala Ala Asn Lys
    530   535   540

Thr Thr Leu Glu Asn Val Leu Met Thr Ser Glu Glu Ile Lys Thr
545   550   555   560

Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Val Val Ser Ser Asn Leu
            565   570   575

Gln Ser Ser Thr Ala Gly Pro Gln Thr Gln Thr Val Asn Ser Gln Gly
        580   585   590

Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly
        595   600   605

Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser
                            Page 345

```
            610                    615                    620
Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile Leu
625                 630                 635                 640

Ile Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Glu Val Phe Thr Pro
                645                 650                 655

Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser
                660                 665                 670

Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn
                675                 680                 685

Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Asn Asn Val Glu
                690                 695                 700

Phe Ala Val Asn Asn Glu Gly Val Tyr Thr Glu Pro Arg Pro Ile Gly
705                 710                 715                 720

Thr Arg Tyr Leu Thr Arg Asn Leu
                725
```

```
<210>  228
<211>  728
<212>  PRT
<213>  vp1, modified rh.13

<400>  228
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1                5                  10                 15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20                 25                 30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
                35                 40                 45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                 55                 60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                 70                 75                 80

Lys Gln Leu Glu Gln Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
                85                 90                 95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                105                110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
                115                120                125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                135                140

Pro Ile Glu Ser Pro Asp Ser Ser Thr Gly Ile Gly Lys Lys Gly Gln
145                150                155                160

Gln Pro Ala Lys Lys Lys Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu
                165                170                175

Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro Ala Ala Pro Ser
                180                185                190

Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Met Ala
    195                200                205

Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp
```

Page 346

```
              210                 215                     220

    His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr
    225                 230                 235                 240

    Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile
                    245                 250                 255

    Ser Ser Gln Ser Gly Ala Thr Asn Asp Asn His Phe Phe Gly Tyr Ser
                    260                 265                 270

    Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe Ser
                    275                 280                 285

    Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg Pro
        290                 295                 300

    Arg Lys Leu Arg Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val Thr
    305                 310                 315                 320

    Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr Ile
                    325                 330                 335

    Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly Ser
                    340                 345                 350

    Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met Ile
                    355                 360                 365

    Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ser Val Gly
        370                 375                 380

    Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu Arg
    385                 390                 395                 400

    Thr Gly Asn Asn Phe Glu Phe Ser Tyr Thr Phe Glu Glu Val Pro Phe
                    405                 410                 415

    His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn Pro
                    420                 425                 430

    Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala Arg Thr Gln Ser Thr Thr
                    435                 440                 445

    Gly Ser Thr Arg Glu Leu Gln Phe His Gln Ala Gly Pro Asn Thr Met
        450                 455                 460

    Ala Glu Gln Ser Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln Gln
    465                 470                 475                 480

    Arg Leu Ser Lys Asn Ile Asp Ser Asn Asn Asn Ser Asn Phe Ala Trp
                    485                 490                 495

    Thr Gly Ala Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Thr Asn
                    500                 505                 510

    Pro Gly Val Ala Met Ala Thr Asn Lys Asp Asp Glu Asp Gln Phe Phe
        515                 520                 525

    Pro Ile Asn Gly Val Leu Val Phe Gly Lys Thr Gly Ala Ala Asn Lys
        530                 535                 540

    Thr Thr Leu Glu Asn Val Leu Met Thr Ser Glu Glu Ile Lys Thr
    545                 550                 555                 560

    Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Val Val Ser Ser Asn Leu
                    565                 570                 575
```

Page 347

Gln Ser Ser Thr Ala Gly Pro Gln Thr Gln Thr Val Asn Ser Gln Gly
                580   585   590

Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly
            595   600   605

Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro Ser
        610   615   620

Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Gln Ile Leu
625   630   635   640

Ile Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Glu Val Phe Thr Pro
                645   650   655

Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser
            660   665   670

Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn
        675   680   685

Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Asn Asn Val Glu
    690   695   700

Phe Ala Val Asn Asn Glu Gly Val Tyr Thr Glu Pro Arg Pro Ile Gly
705   710   715   720

Thr Arg Tyr Leu Thr Arg Asn Leu
                725

<210>   229
<211>   729
<212>   PRT
<213>   vp1, modified rh.37

<400>   229

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
            35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Ile Asp Ser Pro Asp Ser Ser Thr Gly Ile Gly Lys Lys Gly Gln
145   150   155   160

Gln Pro Ala Lys Lys Lys Leu Asn Phe Gly Gln Thr Gly Asp Ser Glu
            165   170   175

Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro Ala Ala Pro Ser
            180   185   190

Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly Gly Ala Pro Thr Ala
            195   200   205

Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ala Ser Gly Asn Trp
    210   215   220

His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile Thr Thr Ser Thr
225   230   235   240

Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu Tyr Lys Gln Ile
                245   250   255

Ser Ser Ser Ser Ser Gly Ala Thr Asn Asp Asn His Tyr Phe Gly Tyr
            260   265   270

Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Cys His Phe
            275   280   285

Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp Gly Phe Arg
    290   295   300

Pro Lys Lys Leu Arg Phe Lys Leu Phe Asn Ile Gln Val Lys Glu Val
305   310   315   320

Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn Asn Leu Thr Ser Thr
            325   330   335

Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu Pro Tyr Val Leu Gly
            340   345   350

Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp Val Phe Met
            355   360   365

Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser Gln Ser Val
    370   375   380

Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser Gln Met Leu
385   390   395   400

Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr Ser Phe Glu Asp Val Pro
            405   410   415

Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg Leu Met Asn
    420   425   430

Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala Arg Thr Gln Ser Thr
    435   440   445

Thr Gly Ser Thr Arg Glu Leu Gln Phe His Gln Ala Gly Pro Asn Thr
    450   455   460

Met Ala Glu Gln Ser Lys Asn Trp Leu Pro Gly Pro Cys Tyr Arg Gln
465   470   475   480

Gln Arg Leu Ser Lys Asn Leu Asp Phe Asn Asn Asn Ser Asn Phe Ala
            485   490   495

Trp Thr Ala Ala Thr Lys Tyr His Leu Asn Gly Arg Asn Ser Leu Thr
            500   505   510

Asn Pro Gly Ile Pro Met Ala Thr Asn Lys Asp Asp Glu Asp Gln Phe
    515   520   525

Phe Pro Ile Asn Gly Val Leu Val Phe Gly Lys Thr Gly Ala Ala Asn
    530   535   540

Lys Thr Thr Leu Glu Asn Val Leu Met Thr Ser Glu Glu Ile Lys
545   550   555   560

Thr Thr Asn Pro Val Ala Thr Glu Glu Tyr Gly Val Val Ser Ser Asn
                565   570   575

Leu Gln Ser Ser Thr Ala Gly Pro Gln Ser Gln Thr Ile Asn Ser Gln
                580   585   590

Gly Ala Leu Pro Gly Met Val Trp Gln Asn Arg Asp Val Tyr Leu Gln
                595   600   605

Gly Pro Ile Trp Ala Lys Ile Pro His Thr Asp Gly Asn Phe His Pro
        610   615   620

Ser Pro Leu Met Gly Gly Phe Gly Leu Lys His Pro Pro Pro Gln Ile
625   630   635   640

Leu Ile Lys Asn Thr Pro Val Pro Ala Asn Pro Pro Glu Val Phe Thr
                645   650   655

Pro Ala Lys Phe Ala Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val
                660   665   670

Ser Val Glu Ile Glu Trp Glu Leu Gln Lys Glu Asn Ser Lys Arg Trp
                675   680   685

Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr Ala Lys Ser Asn Asn Val
        690   695   700

Glu Phe Ala Val Asn Pro Asp Gly Val Tyr Thr Glu Pro Arg Pro Ile
705   710   715   720

Gly Thr Arg Tyr Leu Thr Arg Asn Leu
                725

<210> 230
<211> 737
<212> PRT
<213> vp1, modified rh.67

<400> 230

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
                20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
        50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115   120   125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                    165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
                180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
210   215   220

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Ser Gln Ser Ala Gly Ser Thr Asn Asp Asn
                260   265   270

Val Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
            275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
370   375   380

Gly Ser Gln Ser Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ala
        435   440   445

Arg Thr Gln Ser Asn Ala Gly Gly Thr Ala Gly Asn Arg Glu Leu Gln
    450   455   460

Phe Tyr Gln Gly Gly Pro Thr Thr Met Ala Glu Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Phe Arg Gln Gln Arg Val Ser Lys Thr Leu Asp
            485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Page 351

Leu Asn Gly Arg Asn Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Ile
    530   535   540

Phe Gly Lys Thr Gly Ala Ala Asn Lys Thr Thr Leu Glu Asn Val Leu
545   550   555   560

Met Thr Asn Glu Glu Glu Ile Arg Pro Thr Asn Pro Val Ala Thr Glu
            565   570   575

Glu Tyr Gly Thr Val Ser Ser Asn Leu Gln Ala Ala Asn Thr Ala Ala
        580   585   590

Gln Thr Gln Val Val Asn Asn Gln Gly Ala Leu Pro Gly Met Val Trp
        595   600   605

Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610   615   620

His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645   650   655

Ala Asn Pro Pro Glu Val Phe Thr Pro Ala Lys Phe Ala Ser Phe Ile
            660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser
    690   695   700

Asn Phe Asp Lys Gln Thr Gly Val Asp Phe Ala Val Asp Ser Gln Gly
705   710   715   720

Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn
            725   730   735

Leu

<210> 231
<211> 738
<212> PRT
<213> vp1, modified rh.2

<400> 231

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
        130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly His Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
            245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
            325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
        340   345   350

Leu Pro Tyr Val Pro Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Ser Tyr
            405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
            420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Gln Gly Thr Gln Gln Leu Leu
                        Page 353

```
        450                  455                  460
```

Phe Ser Gln Ala Gly Pro Ala Asn Met Ser Ala Gln Ala Lys Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
            500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

His Lys Asp Asp Glu Glu Arg Phe Phe Pro Ser Ser Gly Val Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Ser Val
545   550   555   560

Met Leu Thr Ser Glu Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
            565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Thr Asn Gly Ala
        580   585   590

Pro Ile Val Gly Thr Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
            645   650   655

Pro Ala Asp Pro Pro Thr Thr Phe Ser Gln Ala Lys Leu Ala Ser Phe
        660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Thr Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
            725   730   735

Asn Leu


```
<210>    232
<211>    738
<212>    PRT
<213>    vp1, modified rh.58

<400>    232
```

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
        20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro

```
                35                  40                    45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50                  55                  60

Val Asn Ala Ala Asp Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65                  70                  75                  80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85                  90                  95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100                 105                 110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115                 120                 125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130                 135                 140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145                 150                 155                 160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165                 170                 175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180                 185                 190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195                 200                 205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210                 215                 220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225                 230                 235                 240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245                 250                 255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp
            260                 265                 270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275                 280                 285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290                 295                 300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305                 310                 315                 320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325                 330                 335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340                 345                 350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355                 360                 365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
    370                 375                 380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385                 390                 395                 400
```

Page 355

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                    405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
                420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
            435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
        450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
                500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
            515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
        530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
            580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Ser Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
            660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
    690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                725   730   735

Asn Leu

<210> 233
<211> 738
<212> PRT

<213> vp1, modified rh.64

<400> 233

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1   5   10   15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20   25   30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50   55   60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
                85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
                100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
            115   120   125

Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130   135   140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145   150   155   160

Gly Lys Lys Gly Gln Gln Pro Ala Arg Lys Arg Leu Asn Phe Gly Gln
                165   170   175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
            180   185   190

Pro Ala Ala Pro Ser Ser Val Gly Ser Gly Thr Met Ala Ala Gly Gly
            195   200   205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Ser
    210   215   220

Ser Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Ser Thr Asn Asp
            260   265   270

Asn Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn
        275   280   285

Arg Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn
    290   295   300

Asn Asn Trp Gly Phe Arg Pro Lys Arg Leu Ser Phe Lys Leu Phe Asn
305   310   315   320

Ile Gln Val Lys Glu Val Thr Gln Asn Glu Gly Thr Lys Thr Ile Ala
                325   330   335

Asn Asn Leu Thr Ser Thr Ile Gln Val Phe Thr Asp Ser Glu Tyr Gln
            340   345   350

Leu Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe
        355   360   365

Pro Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn
370   375   380

Asn Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr
385   390   395   400

Phe Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Ser Phe Ser Tyr
                405   410   415

Thr Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser
                420   425   430

Leu Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu
        435   440   445

Ser Arg Thr Gln Ser Thr Gly Gly Thr Ala Gly Thr Gln Gln Leu Leu
    450   455   460

Phe Ser Gln Ala Gly Pro Ser Asn Met Ser Ala Gln Ala Arg Asn Trp
465   470   475   480

Leu Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Leu Ser
                485   490   495

Gln Asn Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Thr Lys Tyr His
        500   505   510

Leu Asn Gly Arg Asp Ser Leu Val Asn Pro Gly Val Ala Met Ala Thr
        515   520   525

Asn Lys Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Ile Leu Met
    530   535   540

Phe Gly Lys Gln Gly Ala Gly Lys Asp Asn Val Asp Tyr Ser Asn Val
545   550   555   560

Met Leu Thr Ser Glu Glu Ile Lys Thr Thr Asn Pro Val Ala Thr
                565   570   575

Glu Gln Tyr Gly Val Val Ala Asp Asn Leu Gln Gln Gln Asn Thr Ala
                580   585   590

Pro Ile Val Gly Ala Val Asn Ser Gln Gly Ala Leu Pro Gly Met Val
        595   600   605

Trp Gln Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile
    610   615   620

Pro His Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe
625   630   635   640

Gly Leu Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val
                645   650   655

Pro Ala Asp Pro Pro Thr Ala Phe Asn Gln Ala Lys Leu Asn Ser Phe
                660   665   670

Ile Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu
        675   680   685

Leu Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr
        690   695   700

Ser Asn Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu
705   710   715   720

Page 358

Gly Val Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg
                  725   730   735

Asn Leu

<210>   234
<211>   735
<212>   PRT
<213>   vp1, modified ch.5

<400>   234

Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Thr Leu Ser
1   5   10   15

Glu Gly Ile Arg Gln Trp Trp Lys Leu Lys Pro Gly Pro Pro Pro Pro
              20   25   30

Lys Pro Asn Gln Gln His Arg Asp Asp Ser Arg Gly Leu Val Leu Pro
          35   40   45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
      50   55   60

Val Asn Glu Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65   70   75   80

His Gln Leu Lys Gln Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala
              85   90   95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
              100   105   110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
          115   120   125

Leu Gly Leu Val Glu Glu Ala Val Lys Thr Ala Pro Gly Lys Lys Arg
      130   135   140

Pro Ile Glu Gln Ser Pro Ala Glu Pro Asp Ser Ser Ser Gly Ile Gly
145   150   155   160

Lys Ser Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
              165   170   175

Gly Asp Thr Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro Pro
              180   185   190

Ala Ala Pro Ser Gly Val Gly Ser Asn Thr Met Ala Ser Gly Gly Gly
          195   200   205

Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
      210   215   220

Ser Gly Asn Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Ile
225   230   235   240

Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
              245   250   255

Tyr Lys Gln Ile Ser Ser Glu Ser Gly Ala Thr Asn Asp Asn His Tyr
              260   265   270

Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His
          275   280   285

Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Asn Trp
      290   295   300

Page 359

```
Gly Phe Arg Pro Lys Lys Leu Asn Phe Lys Leu Phe Asn Ile Gln Val
305              310              315              320

Lys Glu Val Thr Gln Asn Asp Gly Thr Thr Thr Ile Ala Asn Asn Leu
            325              330              335

Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu Pro Tyr
            340              345              350

Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro Ala Asp
            355              360              365

Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn Gly Ser
    370              375              380

Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe Pro Ser
385              390              395              400

Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr Phe Glu
            405              410              415

Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu Asp Arg
            420              425              430

Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Ser Lys Thr
            435              440              445

Gln Gly Thr Ser Gly Thr Thr Gln Gln Ser Arg Leu Gln Phe Ser Gln
    450              455              460

Ala Gly Pro Ser Ser Met Ala Gln Gln Ala Lys Asn Trp Leu Pro Gly
465              470              475              480

Pro Ser Tyr Arg Gln Gln Arg Met Ser Lys Thr Ala Asn Asp Asn Asn
            485              490              495

Asn Ser Glu Phe Ala Trp Thr Ala Ala Thr Lys Tyr Tyr Leu Asn Gly
            500              505              510

Arg Asn Ser Leu Val Asn Pro Gly Pro Pro Met Ala Ser His Lys Asp
            515              520              525

Asp Glu Glu Lys Tyr Phe Pro Met His Gly Asn Leu Ile Phe Gly Lys
            530              535              540

Gln Gly Thr Gly Thr Thr Asn Val Asp Ile Glu Ser Val Leu Ile Thr
545              550              555              560

Asp Glu Glu Glu Ile Arg Thr Thr Asn Pro Val Ala Thr Glu Gln Tyr
            565              570              575

Gly Gln Val Ala Thr Asn His Gln Ser Gln Asn Thr Thr Ala Ser Tyr
            580              585              590

Gly Ser Val Asp Ser Gln Gly Ile Leu Pro Gly Met Val Trp Gln Asp
            595              600              605

Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His Thr
    610              615              620

Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu Lys
625              630              635              640

His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala Asn
            645              650              655

Pro Ala Thr Thr Phe Thr Pro Gly Lys Phe Ala Ser Phe Ile Thr Gln
```

Page 360

```
                     ooo              oo>             o/0

Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln Lys
        675              680             685


Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn Tyr
    690              695             700


Asn Lys Ser Val Asn Val Glu Phe Thr Val Asp Ala Asn Gly Val Tyr
705          710             715             720


Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

<210> 235
<211> 736
<212> PRT
<213> vp1, modified rh.8

<400> 235

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1             5               10              15


Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
        20              25              30


Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
    35              40              45


Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60


Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80


Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Leu Arg Tyr Asn His Ala
            85              90              95


Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110


Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125


Leu Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140


Pro Val Glu Gln Ser Pro Gln Glu Pro Asp Ser Ser Ser Gly Ile Gly
145             150             155             160


Lys Thr Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln Thr
            165             170             175


Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Leu Gly Glu Pro Pro
            180             185             190


Ala Ala Pro Ser Gly Leu Gly Pro Asn Thr Met Ala Ser Gly Gly Gly
        195             200             205


Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn Ser
    210             215             220


Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val Ile
225             230             235             240


Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His Leu
            245             250             255


Tyr Lys Gln Ile Ser Asn Gly Thr Ser Gly Gly Ser Thr Asn Asp Asn
```

```
                    260                    265                    270
```

Thr Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Glu Gly Thr Lys Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Thr Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Val Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
        370   375   380

Gly Ser Gln Ala Leu Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Gln Phe Ser Tyr Thr
            405   410   415

Phe Glu Asp Val Pro Phe His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Val
        435   440   445

Arg Thr Gln Thr Thr Gly Thr Gly Gly Thr Gln Thr Leu Ala Phe Ser
    450   455   460

Gln Ala Gly Pro Ser Ser Met Ala Asn Gln Ala Arg Asn Trp Val Pro
465   470   475   480

Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Thr Thr Thr Asn Gln Asn
            485   490   495

Asn Asn Ser Asn Phe Ala Trp Thr Gly Ala Ala Lys Phe Lys Leu Asn
            500   505   510

Gly Arg Asp Ser Leu Met Asn Pro Gly Val Ala Met Ala Ser His Lys
        515   520   525

Asp Asp Glu Asp Arg Phe Phe Pro Ser Ser Gly Val Leu Ile Phe Gly
        530   535   540

Lys Gln Gly Ala Gly Asn Asp Gly Val Asp Tyr Ser Gln Val Leu Ile
545   550   555   560

Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu Glu
            565   570   575

Tyr Gly Ala Val Ala Ile Asn Asn Gln Ala Ala Asn Thr Gln Ala Gln
        580   585   590

Thr Gly Leu Val His Asn Gln Gly Val Ile Pro Gly Met Val Trp Gln
        595   600   605

Asn Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro His
610   615   620

```
Thr Asp Gly Asn Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly Leu
625                 630             635                 640

Lys His Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro Ala
                645             650             655

Asp Pro Pro Leu Thr Phe Asn Gln Ala Lys Leu Asn Ser Phe Ile Thr
            660             665             670

Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu Gln
        675             680             685

Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Ser Asn
    690             695             700

Tyr Tyr Lys Ser Thr Asn Val Asp Phe Ala Val Asn Thr Glu Gly Val
705             710             715                 720

Tyr Ser Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Asn Leu
            725             730             735
```

```
<210>  236
<211>  737
<212>  PRT
<213>  vp1, modified hu.43

<400>  236
```

```
Met Ala Ala Asp Gly Tyr Leu Pro Asp Trp Leu Glu Asp Asn Leu Ser
1           5               10              15

Glu Gly Ile Arg Glu Trp Trp Asp Leu Lys Pro Gly Ala Pro Lys Pro
            20              25              30

Lys Ala Asn Gln Gln Lys Gln Asp Asp Gly Arg Gly Leu Val Leu Pro
        35              40              45

Gly Tyr Lys Tyr Leu Gly Pro Phe Asn Gly Leu Asp Lys Gly Glu Pro
    50              55              60

Val Asn Ala Ala Asp Ala Ala Ala Leu Glu His Asp Lys Ala Tyr Asp
65              70              75              80

Gln Gln Leu Lys Ala Gly Asp Asn Pro Tyr Pro Arg Tyr Asn His Ala
            85              90              95

Asp Ala Glu Phe Gln Glu Arg Leu Gln Glu Asp Thr Ser Phe Gly Gly
            100             105             110

Asn Leu Gly Arg Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro
        115             120             125

Leu Gly Leu Val Glu Glu Ala Ala Lys Thr Ala Pro Gly Lys Lys Arg
    130             135             140

Pro Val Glu Pro Ser Pro Gln Arg Ser Pro Asp Ser Ser Thr Gly Ile
145             150             155             160

Gly Lys Lys Gly Gln Gln Pro Ala Lys Lys Arg Leu Asn Phe Gly Gln
            165             170             175

Thr Gly Asp Ser Glu Ser Val Pro Asp Pro Gln Pro Ile Gly Glu Pro
        180             185             190

Pro Ala Gly Pro Ser Gly Leu Gly Ser Gly Thr Met Ala Ala Gly Gly
    195             200             205

Gly Ala Pro Met Ala Asp Asn Asn Glu Gly Ala Asp Gly Val Gly Asn
    210             215             220
```

Ala Ser Gly Asn Trp His Cys Asp Ser Thr Trp Leu Gly Asp Arg Val
225   230   235   240

Ile Thr Thr Ser Thr Arg Thr Trp Ala Leu Pro Thr Tyr Asn Asn His
                245   250   255

Leu Tyr Lys Gln Ile Ser Ser Ala Ser Thr Gly Ala Ser Asn Asp Asn
            260   265   270

His Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg
        275   280   285

Phe His Cys His Phe Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn
    290   295   300

Asn Trp Gly Phe Arg Pro Lys Arg Leu Asn Phe Lys Leu Phe Asn Ile
305   310   315   320

Gln Val Lys Glu Val Thr Thr Asn Asp Gly Val Thr Thr Ile Ala Asn
            325   330   335

Asn Leu Thr Ser Thr Val Gln Val Phe Ser Asp Ser Glu Tyr Gln Leu
            340   345   350

Pro Tyr Val Leu Gly Ser Ala His Gln Gly Cys Leu Pro Pro Phe Pro
        355   360   365

Ala Asp Val Phe Met Ile Pro Gln Tyr Gly Tyr Leu Thr Leu Asn Asn
    370   375   380

Gly Ser Gln Ala Val Gly Arg Ser Ser Phe Tyr Cys Leu Glu Tyr Phe
385   390   395   400

Pro Ser Gln Met Leu Arg Thr Gly Asn Asn Phe Thr Phe Ser Tyr Thr
            405   410   415

Phe Glu Glu Val Pro Leu His Ser Ser Tyr Ala His Ser Gln Ser Leu
            420   425   430

Asp Arg Leu Met Asn Pro Leu Ile Asp Gln Tyr Leu Tyr Tyr Leu Asn
        435   440   445

Arg Thr Gln Asn Gln Ser Gly Ser Ala Gln Asn Lys Asp Leu Leu Phe
    450   455   460

Ser Arg Gly Ser Pro Ala Gly Met Ser Val Gln Pro Lys Asn Trp Leu
465   470   475   480

Pro Gly Pro Cys Tyr Arg Gln Gln Arg Val Ser Lys Thr Lys Thr Asp
            485   490   495

Asn Asn Asn Ser Asn Phe Thr Trp Thr Gly Ala Ser Lys Tyr Asn Leu
            500   505   510

Asn Gly Arg Glu Ser Ile Ile Asn Pro Gly Thr Ala Met Ala Ser His
        515   520   525

Lys Asp Asp Glu Asp Lys Phe Phe Pro Met Ser Gly Val Met Ile Phe
    530   535   540

Gly Lys Glu Ser Ala Gly Ala Ser Asn Thr Ala Leu Asp Asn Val Met
545   550   555   560

Ile Thr Asp Glu Glu Glu Ile Lys Ala Thr Asn Pro Val Ala Thr Glu
            565   570   575

Arg Phe Gly Thr Val Ala Val Asn Phe Gln Ser Ser Ser Thr Asp Pro
    580   585   590

Page 364

Ala Thr Gly Asp Val His Ala Met Gly Ala Leu Pro Gly Met Val Trp
        595   600   605

Gln Asp Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro
    610   615   620

His Thr Asp Gly His Phe His Pro Ser Pro Leu Met Gly Gly Phe Gly
625   630   635   640

Leu Lys Asn Pro Pro Pro Gln Ile Leu Ile Lys Asn Thr Pro Val Pro
            645   650   655

Ala Asn Pro Pro Ala Glu Phe Ser Ala Thr Lys Phe Ala Ser Phe Ile
            660   665   670

Thr Gln Tyr Ser Thr Gly Gln Val Ser Val Glu Ile Glu Trp Glu Leu
        675   680   685

Gln Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Val Gln Tyr Thr Ser
    690   695   700

Asn Tyr Ala Lys Ser Ala Ser Val Asp Phe Thr Val Asp Asn Asn Gly
705   710   715   720

Leu Tyr Thr Glu Pro Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro
            725   730   735

Leu